NATIONAL PETROLEUM NEWS

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Published Every Wednesday at 812 Huron Road, Cleveland, Ohio, by the National Petroleum Publishing Company

15 cents a copy, $5 a year in the United States, $6 in Canada, and $7 in foreign countries. Trade mark Reg. U.S. Patent Office. Entered as second class matter Jan. 17, 1910, at Cleveland, O., postoffice, under act of Mar. 3, 1879

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NATIONAL PETROLEUM NEWS

Published Every Wednesday

VOL. XI | CLEVELAND, OHIO, MARCH 5, 1919 | No. 10

Little Chance Federal Gasoline Specifications Will Be Enacted

By Special Correspondent

WASHINGTON, March 4.

A MONTH of life is all there is left of the Fuel Administration, of which the oil division is a part. April 1st is the day set for closing all the work, except that of the Specifications Committee of the oil division. That, according to the orders of the President, is to continue six months after the end of the war. The chances are, however, that it will not last even to the end of the war. There is no money for the Fuel Administration. Even if the plans made last October, when estimates for the year beginning July 1 were made, were carried into effect, it is doubtful whether the oil division would be able to continue long. The plans called for only $150,000 for the work of the division. They provided ten times as much for the coal and coke division, which, in the eyes of many, is of not greater, if as great, importance as the oil division.

There is not one chance in a thousand that Director Requa will be able to carry out his idea for the standardizing of gasoline specifications, even if the states co-operated and the industry made no objections. The industry has made objections and the states are not co-operating.

Practically speaking, there has been no response to the invitations given the governors by the director. There have been polite answers, but, so far as can be learned, not one of them is really responsive to the suggestion. In the month of life remaining it would be expecting the impossible to expect that move to assume proportions to encourage Director Requa to continue the standardization committee beyond the life of the Fuel Administration.

The best thought now is that the committee will be able to standardize specifications for the lubricating oils to be bought by the various departments of the government. Specifications for the gasoline ordered by the government were adopted, of course, during the war. They are to continue so far as any one now knows because the order of the President creating the committee makes its standards operative until changed by another order.

Specifications for gasoline for sale to the public, however, may not be prescribed in that way. The national government has no power, and, so far as now appears, there is no possibility of co-ordination of the standardization work of the different states. Each state will do as it pleases. The suggestion of a standard confining the use of the word gasoline to something having an end point not higher than 428, made by the oil division, was made, not because the men of the oil division are satisfied with that limitation, but as a concession to the states desiring a narrower cut.

The whole proposition to adopt a standard for gasoline by any authority, municipal, state or federal, is based on the theory that the man who buys motor fuel for his car is an ignoramus who can exercise no judgment or discrimination himself in the matter; that if he buys kerosene for gasoline once at one place and has trouble he will nevertheless keep returning and returning to that place for his supply, instead of trying another place and another product.

While it may seem ridiculous to compare the effort to standardize whisky and gasoline, there is a similarity between them worth remembering, because the effort to standardize whisky resulted in a fiasco, so far as those who started it are concerned. During the fight to make a standard for that article of commerce which is soon to disappear, specifications were drawn up, which, if adopted, would have put some distillers out of business, or required them to treat their raw material in a way that would have rendered their established processes useless. In the end it was found, by those who had no bias in the matter, that the best way was to allow the use of the word whisky on all grain distillates. The conclusion was that the basic material should be grain, but that the product was whisky, if weak enough to be drunk, regardless of the methods used in producing it, regardless of its specific gravity and regardless of whether it had much or little of this, that or the other chemical or characteristic.

An opportunity for discussion of possible gasoline standards with state governors was afforded on March 3 and the two following days, because a number of them was in the city in answer to the President's invitation to them to discuss unemployment with a view to discovering methods for having work on public improvements resumed. However, it was not brought up.

Says Shipping Board Will Use 31,209,482 Bbls. Fuel Oil In 1919

By Special Correspondent

WASHINGTON, March 4.—Some inkling of what the demands of this country's merchant marine for fuel oil may be this year even have been given the public within the last few days in a statement attributed to J. H. Rosseter, director of operations of the Shipping Board, that the 1919 requirements of the board would call for 31,209,482 barrels of fuel oil. On the basis of 42 gallons to the barrel, which is being accepted by official Washington now for all petroleum products, that means 1,300,000,000 gallons of fuel oil to be consumed this year by merchant ships operated by the government. That is probably a fourth, at least a fifth, of all the fuel oil that will be produced in this country in 1919. In 1918 we turned out around seven billion gallons. In 1917 we produced 6,300,000,000 gallons.

Practical oil men are somewhat inclined to doubt the correctness of the figures, inasmuch as the statement is further made that only one-third of the ships in the government fleet are oil burners. However, if anything like this amount is needed by the merchant marine the problem of what to do with the surplus stocks of fuel oil will be largely solved. The estimates in barrels of the needs of the Shipping Board by months are given by Director Rosseter as follows: January, 918,466; February, 1,176,966; March, 1,335,131; April, 1,615,341; May, 2,133,271; June, 2,424,576; July, 2,790,711; August, 3,153,661; September, 3,397,366; October, 3,736,691; November, 4,064,606; December, 4,462,696; total, 31,209,482.

It has also been stated here that Secretary Daniels of the Navy has informed the Senate commerce committee that the needs of the Shipping Board would also call for the amount of fuel oil designated by Director Rosseter. This is in addition to the requirements of the navy proper, which it is said will amount to 4,000,000 barrels. The announcement has been made here that bids have been asked on the Shipping Board's fuel oil requirements but, as far as can be learned, no specifications or inquiries have been received as yet by the larger oil companies in New York.

There has been some talk in Shipping Board circles to the effect that prices that have been charged by the oil companies for their fuel oil in the past have been too high. In connection with its estimated 1919 requirements the statement is attributed to Director Rosseter that the Shipping Board expected to pay $35,000,000 and $40,000,000 for its 31 million barrels and better needed this year.

Texas Making Good Headway In Refinery Branch Of Business

Staff Special

FORT WORTH, March 1. — Announcement that the Magnolia Petroleum Company will spend $100,000 in enlarging its Fort Worth skimming plant and converting it into a more completely equipped refinery with wax stills, together with other announcements of the purchase of plant sites for projected construction work of various interests, calls attention to this sort of activity in central north Texas. Material for the construction of additional agitators and stills that will give the Magnolia plant a charging capacity of 10,000 barrels daily has been loaded on the cars at Beaumont, it is announced, for shipment.

The prospective building of a smaller plant at Fort Worth was indicated this week by the purchase by W. R. Spann, of Shreveport, and others, of a 30-acre site on the Denton Road, near the Cotton Belt tracks, for $15,000. The Home Oil Refining Company of Texas, recently chartered by Tulsa and Fort Worth interests, also recently acquired a site and will dismantle the old O. K. Refinery at Niotaze, Kan., which is equipped with wax plant, moving it to Fort Worth.

Superintendent Berryman, in charge of construction of the Baltic Oil & Refining Company (Curtis and Aiken, J. S. Cosden, Anderson & Gustafson) plant, expects to have the first 3,000-barrel charging capacity ready by June 15th. This plant is to be finally of 5,000-barrel charging capacity.

Ira Eells, superintendent of construction, is in Fort Worth and ground has been broken opposite the Pierce Oil Corporation refinery for the Evans-Thwing Refining Company plant that is being dismantled in Kansas for transfer to Fort Worth. This plant also is planned to have 5,000 barrels charging capacity.

Plans are also going ahead slowly for a plant to be erected by D. B. Welty of Oklahoma City and associates under the name of the Federal Oil & Refining Company. It is proposed to erect a 2,000-barrel plant.

Site has been purchased by J. J. Taxman and others, representing the Eldorado Refining Company of Eldorado, Kan., and plans are said to be under consideration for a 3000-barrel plant.

There has been no official confirmation of a report current in Fort Worth that the Midland Refining Company of Eldorado (W. G. Skelly of Tulsa, president) will build in North Texas, nor has there been confirmation of plans credited to the Texas & Pacific Coal & Oil Company for building a refinery at Thurber, between Fort Worth and the Ranger oil fields. Similarly, there has been no confirmation of plans of Wagner & Steiner to build a 5,000-barrel refinery.

Projected Plants

A large number of plants are included among those listed as projected, some of which have not gone thru the promotion stages as yet. A list of plants projected, additional to those hitherto given, has been issued by the Fort Worth Chamber of Commerce, some of which will be built, and others which probably will not finally emerge from the promotion stage. These include the Southern Oil & Refining Company, Fort Worth, 5,000 barrels, Abilene 1,000 barrels; Panther City Oil & Refining Company, Fort Worth, 1,000 barrels; Bankers Petroleum & Refining Company, Wichita Falls, 2,500 barrels; Ranger-Wichita Oil & Refining Company, Wichita Falls, 2,500 barrels; Dilman & Wright, Burkburnett, 1,500 barrels; Beaver Electra Refining Company, Electra, 2,000 barrels; Abilene Oil & Refining Company, Abilene, 1,000 barrels; Olds-Clark Refining Company, Olden, 1,000 barrels.

Plants listed as completed or under construction include the Brownwood Oil Refining Company, Brownwood, 500 barrels; Brown Ard Refining Company, Brownwood, 600 barrels; Hall Mountain Refining Company, Brownwood, 600 barrels; Carson Refining Company, Brownwood, 600 barrels; Gotebo Refining Company, Brownwood, 1,000 barrels.

Plants under construction include the Lone Star Oil & Refining Company, Coleman, 500 barrels; Beaver Valley Oil & Refining Company, Cisco 1,000 barrels; Odessa Oil & Refining Company Ranger, 3,600 barrels; Hercules Refining Company, Dallas, 1,200 barrels.

Among the larger plants in north and west Texas are the Magnolia Petroleum Company, Fort Worth, 10,000 barrels; Pierce Oil Corporation, Fort Worth, 15,000 barrels; Gulf Refining Company, Fort Worth, 5,000 barrels; Oriental Refining Company, Dallas, 3,000 barrels; Texas Company, Dallas, 15,000 barrels; Panhandle Refining Company, Wichita Falls, 5,000 barrels.

Other plants include that of Gilliland & Fisher at Wichita Falls, 1,000 barrels; Lone Star Oil & Refining Company, Wichita Falls, 2,000 barrels; Sunshine State Oil & Refining Company, Wichita Falls, 1,250 barrels; Wichita Valley Oil & Refining Company, Iowa Park, 2,500 barrels; Liberty Refining Company, Cisco, 600 barrels; Electra Refining Company, Electra, 2,000 barrels and the Power Refining Company, Wichita Falls, 1,000 barrels.

Requa and Bedford Will Speak At National Petroleum Congress

By Special Correspondent

CHICAGO, March 3.—Preparations for the National Petroleum Congress, to be held here March 25-27, have been completed and the program, which has just been announced in its entirety, is an excellent indication of what the Congress will mean to the oil industry.

Featured among the several speakers that are down for addresses are Mark L. Requa, Chief of the Oil Division, U. S. Fuel Administration, to be delivered at the luncheon meeting on March 27th, and A. C. Bedford, chairman of the National Petroleum War Service Committee, who will speak at the annual banquet on the closing night.

The opening session of the Congress at noon on the 25th, will be presided over by J. W. Darby, vice-president of the Mid-Continent Oil & Gas Association. The welcoming address at this session will be delivered by Governor F. O. Lowden and speeches will be given by Mr. Darby and Max W. Ball, chief of the Rocky Mountain Division, Roxana Petroleum Company.

Judge C. D. Chamberlin, of Cleveland, general counsel for the National Petroleum Association, will preside at the afternoon meeting on the following day and several good speakers are scheduled for addresses at that session.

The entertainment features have been planned with considerable care. Motion pictures covering the oil industry are scheduled for the evening of the 25th. On the evening of the 26th a banquet and dance is to be tendered the guests by the American Tank Car Corporation at Edelweiss Gardens.

The annual banquet comes on the evening of the 27th, with dancing and an entertainment to follow at its close.

A special entertainment program for the ladies is to be given on the 26th and 27th. These include a reception, luncheon and banquet on the 26th, and a luncheon and entertainment on the 27th, to be followed by a theater party in the afternoon.

The complete program follows:

Tuesday, March 25th
Producers' Day

12:00 noon—convene Gold Room, Congress Hotel, Mr. J. F. Derby, vice-president Mid-Continent Oil & Gas Association, presiding.

"Chicago Welcomes You," Gov. Frank O. Lowden.

Address, Mr. J. F. Darby, Vice-President Mid-Continent Oil & Gas Association.

Oil Production and Leasing of Oil Lands, Mr. Max W. Ball, Chief Rocky Mountain Division, Roxana Petroleum Co.

1:15 p. m.—Motion Pictures: The Shooting Oil Wells in Texas; The Gasoline Engine, in parts.

Vocal Selection—Tulsa Apollo Club.

Open Discussion.

Wednesday, March 26th
Refiners' Day

Convene — Gold Room, Congress Hotel.

12:00 noon—Mr. C. D. Chamberlin, General Counsel, National Petroleum Association, presiding.

The New Oil Country, Mr. Clifford Irish, Chamber of Commerce, Dallas, Texas.

The Legislators View of the Oil Industry, Hon. Phil Campbell, Member of Congress from Kansas.

Vocal Selection—Tulsa Apollo Club.

7:00 p. m.—Banquet, Entertainment and Dance tendered guests by General American Tank Car Corporation, Edelweiss Gardens.

Thursday, March 27th
Jobbers' Day

Mr. C. L. Maguire, presiding.

10:30 a. m.—Business Session American Petroleum League.

Order of Business: Annual Report, Secretary and Treasurer; Report Committee on Consolidation, Election of officers.

12:00 noon—Luncheon, Mr. C. L. Maguire, presiding.

Address—Mr. Mark L. Requa, Chief Oil Division, United States Fuel Administration.

Vocal Selection—Tulsa Apollo Club, 6:30 p. m.—Annual Banquet—Mr. Wilbur D. Nesbit, Toastmaster.

The Community Spirit in Business, Mr. G. I. Sweney, President, Independent Oil Men's Association.

Address—Mr. A. C. Bedford, Chairman National Petroleum War Service Committee.

Address—Gov. Henry J. Allen, of Kansas.

Dancing and Entertainment in Gold Room immediately following close of banquet.

Ladies' Entertainment Committee

Mr. C. Fred Mercer, Chairman, Mr. F. Buckle, Mrs. J. Hoagland, Mrs. H. E. McCormick, Mrs. W. C. Willard.

Wednesday, March 26th

11:00 a. m.—Reception in Parlors, Congress Hotel.

12:00 noon — Luncheon — Marshall Field & Co.

7:00 p. m.—Banquet, Entertainment and Dance tendered guests by General American Tank Car Corporation, Edelweiss Gardens. Autos will convey guests from Congress Hotel to Gardens.

Thursday, March 27th

12:15 p. m. — Luncheon — Florentine Room, Congress Hotel.

2:30 p. m.—Theatre Party.

7:00 p. m.—Annual Banquet—American Petroleum League.

A. J. Diescher Leaves Empire Gas & Fuel

Staff Special

TULSA, March 1. — Announcement has been made at Bartlesville of the resignation of Alfred J. Diescher as vice-president of the Empire Gas & Fuel Company, to enter into business for himself.

Mr. Diescher has been connected with the Empire organization since 1912, when the company's natural gas and oil activities in the Mid-Continent field were in their infancy. He has had much to do with the successful developments of these properties.

During the past year he has made his headquarters in New York, leaving the operation of the properties to the managing committee at Bartlesville. His many friends will be sorry to learn of his leaving the Empire Company but will wish him success in his new field.

The United States Civil Service Commission announces open competitive examinations for oil and gas inspector in the Indian Service at salaries ranging from $1,500 to $1,800 a year. The examination is to be held March 25th, and complete information can be obtained by writing the commission at Washington, D. C.

Purchase Offer Is Not Eagerly Taken

Staff Special

TULSA, March 1.—From present indications it appears that the offer of the Standard of Indiana, the Carter Oil Company and the Empire Company to buy 1,250,000 barrels of fuel oil at $1.20 delivered, is going begging. The offer was made to the Western Petroleum Refiners' Association, at a meeting held February 21st at Kansas City. At that time a committee consisting of George Moore, Consumers' Refining Company, chairman, R. L. Welch, secretary and general counsel; E. E. Schock, president of the association, and president of the Indiahoma Refining Company; Eugene Solow, Home Refining Company; W. D. Richardson and J. H. Miller, was appointed to consider the offer.

The committee consulted with the various Independent refiners of the Mid-Continent on the situation and held a meeting February 27, at Kansas City. At that time only 500,000 barrels of fuel had been offered by the Independent refiners, less than half the amount the big companies were willing to take.

Because of the fact that the price of $1.20 offered was for the oil delivered in storage at Drumwright, Norfolk and Cartoco, Okla., the freight rate would have put the refiners of Tulsa and other far-away points at a disadvantage on the price as compared with those refiners in the Cushing and Yale territory.

The committee worked out a pool arrangement by which the freight rates would be assessed equally on all the refiners filling the order and by borrowing of pipe lines, and storage and arranging routes for the delivery of the oils to the best advantage, worked out a price that would have given all the refiners a price of a little better than $1 a barrel f. o. b. refinery.

The fact that the refiners, many of whom had complained that they were forced by conditions to shut down their plants because they could not pay the prevailing prices for crude and run their plants at a profit with the fuel oil market at its present level, failed to take advantage of the price offered caused considerable surprise to the committee. The Independent refiners have been notified that they should advise the committee by wire if they desire to sell their oil under the terms offered, as it is not known how long the offer of the big companies will be held open.

Expert Joins Staff of Allegheny Company

Stewart Dillon has recently been appointed vice president and manager of the Allegheny Petroleum Company, Warren, Pa., having severed his connections with one of the subsidiary companies of the Riverside Eastern Oil Company, with main offices at Pittsburgh.

Mr. Dillon was formerly chemist at the plant of the Vulcan Oil Refining Company, Coraopolis, before his connection with the Riverside interests. He brings to the Allegheny Petroleum Company a well rounded out experience in refining and marketing operations.

During the war Mr. Dillon was stationed at Rochester with the photographic division of the army, preparing for duty as an army photographer overseas.

Work Out Details For Petroleum Institute

By Special Correspondent

NEW YORK, March 3.—The process of organization of the National Petroleum Institute has been well launched, and later developments are regarded as assuring keen support and vigorous cooperation on the part of every phase of the industry. Many of the practical details of the organization have been worked out, and work is now centered on the drafting of the constitution and by-laws.

It is planned to have the groundwork established for a general meeting in New York about the middle of the month, of the Main Petroleum Committee and all sub-committees. An attendance of at least 150 is counted upon on this occasion. There are about 200 members of the national and subsidiary committees. The soundness and advantages of a national association of the industry have appealed to practically every interest, and the old spirit of trade jealousy seems to have been largely wiped out and a new era of harmony and co-ordination in the common cause created. Chairman Bedford's part in the accomplishment of this vital work has been of invaluable measure and significance, it is felt.

Will Soon Establish Branch In England

The Foco Oil Company, Franklin, Pa., announces it has secured the services of Major W. J. Mac Nab, an officer in the British Army, who has been in charge of the purchasing of supplies in this country for the British military authorities since the start of the war, who will act as its representative in establishing its foreign business. Major Mac Nab will be located for the present at least in London. He will have sales agents working thru Norway, Sweden, France and other countries eventually.

The announcement by the Foco Company it will open an office in England is an indication of what it believes the opportunities of oil companies in this country to be in developing foreign trade. It will specialize in handling lubricants and later naval stores generally.

Major Mac Nab sailed for England last Saturday to secure his discharge from the English army and start on his new work. When the war first started he was associated with the Morgan banking interests in handling purchases in this country of supplies for the British armies. Later that work was transferred to the British War Mission, with headquarters at 120 Broadway, New York, with Major Mac Nab still in charge. W. A. Edsall, vice-president of the Foco company, was associated with the British War Mission during the last few months of the war, having accepted the position there in charge of British military purchases of petroleum products.

Major Mac Nab has recently been on a tour of the Pennsylvania refining district with Edsall, to obtain a first hand knowledge of the petroleum industry. He is taking back with him to England an American wife, a New York girl he met in New York since the war brought him to this country.

Systematizing Motor Truck Operation

How One Company Put Its Motor Delivery Equipment On An Efficiently Operated Basis

THAT the operation of motor trucks, if best results are to be obtained from their use, must be carried on on the same scientific basis as other departments of any business is well understood by the truck manufacturers now and is coming to be understood by the truck operators themselves to an increasing extent. Many business concerns using trucks extensively, however, find their delivery systems expanding so rapidly that they are still operated on a pretty much hit-or-miss fashion. The Transportation Engineering Department of the Packard Motor Car Company, Detroit, in the accompanying copyrighted article shows how systematic methods for routing trucks, cost accounting, etc., can be applied and how they increase truck efficiency.—Editor.

PICTURE to yourself a company handling its group of staple products from direct importing of raw material to direct distribution among merchants, perhaps the largest concern of its kind in the world, growing out of small beginnings two generations ago.

Its founders were personalities—pioneers in planning, two-fisted men in a business fight. Competition brought many a stand-up and knock-down battle.

At no period in this business has the going ever been easy. Profit margins were always narrow and shrinking, as is characteristic of staple necessities. Each year's earnings depended upon ever-increased volume of business, with the most minute and accurate cost records for every department, so that economies might be effected and leaks stopped. The best technical minds available were centered on each phase of the business, from the testing and purchase of raw materials abroad, thru the intricate processes of the factory, and right up to the packing of finished goods for shipment at the factory door.

This successful business equipped itself with a fleet of sixty motor vehicles used for its deliveries and general hauling.

Almost by chance the management discovered that the motor transport was far below the standard of efficiency maintained in its manufacturing and distribution. Distinctly there was a motor transport problem, for accidental comparison of two sheets of cost figures aroused a suspicion as to the efficiency of one section of the motor transport, at least. But it was found that records did not furnish a basis for thorough analysis, because they were incomplete.

At this point the company's motor transport problem was submitted to experienced transportation engineers, with a request for investigation and suggestions.

And here is what the engineers learned:

The motor equipment is operated in two widely separated cities. In each city the company has good garage facilities and in both places a system of cost records had been developed.

But the system followed in each place was different. Both sections of the motor fleet were under the supervision of men who had risen from the ranks of drivers. Their experience in operation, mechanical upkeep and management of men was excellent. They were entitled to commendation for high standard in keeping equipment actually at work, and for good human organization.

But they were not familiar with accounting, much less scientific cost management, and when each devised his own cost system, it was naturally limited to details with which he was most familiar.

For example, blanks were provided for keeping track of items like gasoline, oil, tires, repairs, garage expense, wages of chauffeurs, helpers and mechanics. From these records a sincere effort was made to figure out general operating costs, in miles, tons, days of operation, cost per mile, cost per ton, cost per ton mile.

The first inspection of the motor equipment itself by engineers revealed the fact that not one of the sixty odd vehicles had a speed or distance recording appliance in good working order. This reduced the figuring of ton and mile costs to rough estimates.

It was also found that rule-of-thumb methods had been largely followed in keeping track of gasoline, oil and the like. A clerk intrusted with recording these items would perhaps ask a driver how many miles he made to a gallon

A practical demonstration in the station yard by the motor truck superintendent. The driver didn't know his truck was going to be made an object lesson

One oil company expects its trucks to operate efficiently—and it keeps its plant yard as shown above

of gasoline, and if the driver replied, "About two miles," the busy clerk in good faith said, "Well, you had twenty gallons of gasoline today, Jim, so you must have run about forty miles." And forty miles would probably be entered on the records as the performance of that truck that day!

A motor fleet of that size necessarily consumes large quantities of supplies, such as tires and parts. In neither garage was there any stock-keeping system for supplies. No correct inventory had been made for years, and no correct pricing of the different materials for quick, accurate debit entries against each motor. The company is compelled to merchandise its products in the light of accurate cost records and pricing. But it had never made any effort to merchandise the supplies used in its motor fleet.

Suppose that each garage superintendent had worked out a satisfactory system of records for the above items, and that they were faithfully accounted for day by day. Even then, with lack of uniformity in the two systems, it was impossible to make fair comparisons—when the general management tried to run down obvious discrepancies the cost records were not capable of comparison.

Furthermore, both systems were deficient in monthly and yearly summaries, whereby identical items of experience could be compared, one month with another, and one vehicle with another. Thus, hundreds of wastes and leaks were possible, and could not be corrected because they could not be found. For the same reason, many genuine economies and efficient operating methods were concealed, and could not be brought to light and turned to advantage.

This company's motor equipment includes vehicles of various makes and types and capacity. Records did not show which makers' cars were most efficient, nor the sizes and types of vehicles best adapted to that business.

Among the sixty-odd drivers there was a wide range of ability. Records did not reveal the incompetent man, nor furnish a basis upon which to overcome his shortcomings by instruction, or by directing its attention to important factors of operation. Nor was it possible to discover the most efficient drivers and make their methods available to others. Real injustice was often done drivers, because they could not be given credit for skill, carefulness, economies of fuel and supplies, and other praiseworthy service to the company.

What this company learned from a verbal report, following a brief investigation of garage records and methods by transportation engineers was, that it had never secured a clear mental picture of its motor equipment, much less of its motor transport requirements.

Engineers were asked to put the picture together.

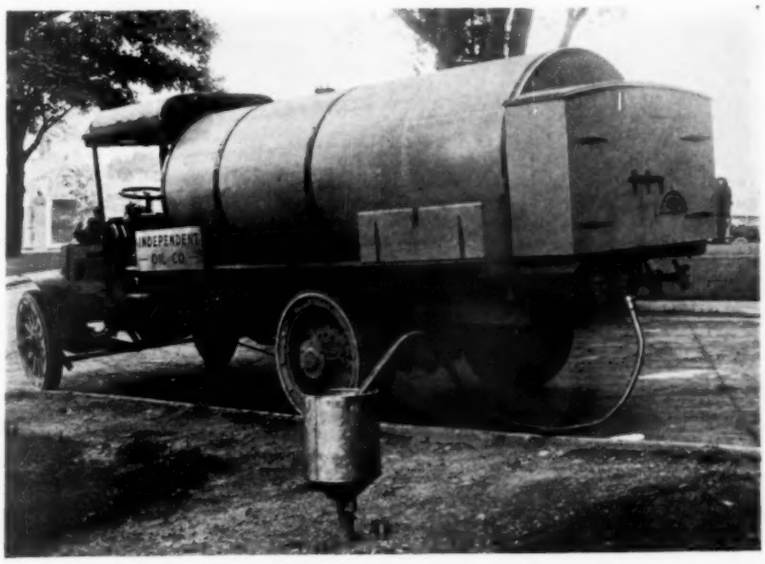
They began by ascertaining the kinds of qualities of material to be hauled by motor, and made a study of the territory to be covered with reference to distances, systematic routing, character of pavements and roads, branch distributing points, facilities for quick loading and unloading at freight terminals, customers' premises, etc.

Then followed an inventory of motor equipment in use—make, type, capacity, age, conditions, kinds of bodies, and general suitability and to service requirements. This included a study of idle equipment during slack periods, and a maximum use of motors during busy periods, with investigation of outside trucking service required in busy seasons.

With this ground work of ascertained fact, engineers were then assigned to ride routes with drivers, keeping accurate route records of gasoline, oil and supplies, mileage, time spent on each trip, time of loading and unloading, time lost by delays of every kind, whether due to mechanical mishaps or outside causes, such as waiting at terminals or customers' premises.

This rout riding made it possible to clearly visualize the general transport situation. Route records were worked out in terms of cost and hours, with almost startling discrepancies revealed in actual kind of freight carried. Lighter vehicles

Delivering tank trucks by truck



A five-ton truck, capacity 1,200 gallons, must unload thru an inch and a half hose, and working time is lost

Efficient loading of a package truck adds to the earning power of the truck

which had been credited with identical performance.

It was found that, because garage superintendents had no trustworthy figures of cost for vehicles of various types and capacities, that freight hauling and delivery service were not clearly separated, and vehicles of widely different character were used indiscriminately for all classes of service.

Route riding on a heavy truck might reveal the fact that it was subjected to too many stops and waits, by reason of the kind of freight carried. Lighter vehicles were used in hauling solid loads over direct routes when they should have been assigned to mixed loads with many stops to relieve large trucks of peddling work.

Opportunities were also found to get drivers' viewpoints on important matters, such as causes of delays at terminals, mechanical mishaps to equipment, the efficiency and dependability of different motors, the convenience of bodies and loading and unloading devices, their feeling toward the company, their interest in efficient operation, and so forth.

As an upshot of this investigation the company is now using the National Standard Cost System adopted by the Truck Owners' Conference, which is recognized as fully covering every essential point of motor transportation costs, and possessing a flexibility which permits its application to motor transportation plants of every size and character.

Furthermore, it now recognizes the difference between motor trucks as an important auxiliary service, tacked loosely to the outside of its business, so to speak, and real motor transportation as incorporated into the business, taking its place as part of the whole process of production, from import of raw materials to final customer deliveries.

Taking this view, motor transportation is machinery. It eliminates hand labor, boosts up output, reduces cost. It demands study as machinery. It demands scientific management, as well as cost keeping. It is an intimate part of the industrial equipment and the factory process, and should be so regarded. Only on that basis will it yield maximum production, and any other basis of operation is unfair, both to the motor equipment and the business itself.

Two Plants Have Disastrous Fires

WARREN, PA., Feb. 28.—Fires at two oil plants, one here and one at Clarendon, during the past few days, did a total damage roughly estimated at $100,000. At the first blaze, that occuring in the plant of the Superior Oil Works on the night of February 19, one still was blown up with 200 barrels of neutral. All the other stills in the plant were put out of commission because of the burning off of the connections. Estimates of the damage run from $20,000 to $50,000.

Fire at the plant of the Tiona Refining Company at Clarendon early in the morning of February 25, practically wiped out the plant and did about $50,000 damages. The fire had its origination in an explosion occurring in one of the stills. Five stills, two barrel houses and two agitators were destroyed, together with other property and several hundred barrels of oil.

A Pennsylvania railroad switching crew did excellent work in pulling out three cars of benzine to a point of safety.

January Oil Exports Close To War Figures

By Special Correspondent

NEW YORK, March 3.—Considerable improvement in the export market during January is reflected in the figures for total exports of mineral oils during that period, just made public by the Bureau of Foreign and Domestic Commerce. Total shipments of all petroleum products ran up to 226,728,139 gallons, as against 186,723,521 gallons for December. Shipments for January were also very close to the total for January a year ago, when the war demand was very great. The figures for January, 1918, were 227,660,562 gallons.

In value, shipments for January of this year were up to $31,617,385, as against $26,492,674 for the same month in 1918. Total value of exports for the seven months ending with January, 1919, amounted to $210,962,671, as against $159,901,511 for the same period a year ago. During the seven months 1,589,383,332 gallons of mineral oils were exported, as compared with 1,552,732,232 gallons for the seven months the year before.

Figures in detail for January, 1919, as compared with January 1918, are as follows:

	Jan., 1919	Jan., 1918
Crude, gals.	14,238,894	17,217,709
	$991,060	$915,830
Kerosene, gals. ..	68,376,409	57,210,212
	$6,867,653	$5,097,094
Lubs. gal.	21,468,312	18,847,731
	$7,842,044	$4,711,775
Gas. Naptha, gals	48,055,541	41,074,520
	$11,411,623	$10,185,181
Res. Fuel Oil, gals.	74,588,983	93,310,390
	$4,505,005	$5,582,794
	7mo., '19	7 mo. '18
Crude, gals	117,099,294	99,318,753
	$7,432,935	$4,562,434
Kerosene, gals..	306,555,447	332,497,104
	$32,777,679	$27,914,488
Lubs. gals.	150,682,487	160,418,423
	$48,739,835	$36,168,628
Gas Naptha gals.	333,468,320,	237,028,040
	$83,101,135	$56,663,039
Res. Fuel Oil..	681,577,784	723,469,914
	$38,911,087	$34,592,922

Utilities Engineer Is Lucey Co. Vice-Pres.

PITTSBURGH, March 1.—F. W. Hoover has been appointed to the position of first vice-president of sales of the Lucey Manufacturing Company, according to an announcement made by the company officials here today. Mr. Hoover joins the organization from Chattanooga, Tenn., where he was vice-president and general manager of the Tennessee Power Company, the East Tennessee Electric Light & Power Company, the Chattanooga Railway & Light Company and the Nashville Railway & Light Company.

Mr. Hoover's experience covers a period of 17 years in mining, engineering and railroad work, which has carried him from coast to coast, and into Alaska

Before assuming his new responsibilities with the Lucey Company, Mr. Hoover is taking a tour of the oil fields to familiarize himself with present conditions. He will make his headquarters in Pittsburgh.

Danger Of Congestion In Texas Is Over

Staff Special

FORT WORTH, March 2.—Stocks of crude oil at Burkburnett do not exceed 50,000 barrels, so well has the situation been handled by the purchasing agencies that provide an outlet for the high flush production that has resulted since the "townsite discovery" well was completed eight months ago.

About 35,000 barrels of the nearly 50,000 barrels daily production is being handled by the pipe lines of the Magnolia and the Texas Company. A 3-inch pipe line that crosses the river from Burkburnett to Devol, Okla., is handling about 5,000 barrels. The Panhandle Refining Company is utilizing about 3,000 barrels daily and four other Wichita Falls plants about 5,000 barrels together. Tank car shipments at the present time total about 8,000 barrels daily, as cars are available in and out of the town.

With these facilities there has been practically no discrepancy between the amount of oil handled in the past and the approximately 53,000 barrels daily production at Burkburnett prior to this week, when the average output took its first considerable tumble.

Similarly, there is no congestion at Ranger, in the southern, or west Texas, district. The Prairie Pipe Line Company and the Texas Company lines had been taking roughly 28,000 barrels daily, the Gulf pipe line, newly completed, provides an outlet for fully 14,000 barrels, tank car shipments have been fluctuating between 8,000 and 15,000 barrels daily, so that not more than 15,000 barrels daily is going into storage in any part of Ranger and contiguous territory. At least the situation has been relieved to the extent that few, if any, wells remain shut down on top of the pay for lack of pipe line connections, except possibly a few remotely situated.

In this connection the Magnolia Petroleum Company has completed its 8-inch pipe line from Olden Switch, southwest of the town of Ranger, to its tank farm south of Duke-Knowles development in Comanche county. As soon as its 8-inch pipe line can be completed from this tank farm to Corsicana, which is expected to be about April 15, the Magnolia also will be able to handle daily runs from Ranger regularly.

Vacuum Pumps In Use At Burkburnett

Staff Special

FORT WORTH, March 4.—Application of vacuum pumps in the townsite developed area at Burkburnett where already some water has been showing in the production, will have the effect of speeding up the decline in Burkburnett production apparent over the last two weeks. Texas laws do not prohibit the use of vacuum pressure as do the Oklahoma states, so that the only solution of the problem is one of general agreement. This area, being one of intensive town lot drilling and one-well operators predominating, the use of vacuum pumps by the few make their general use necessary when the practice once is begun to any considerable extent.

Application Of Vacuum In Production Of Crude Petroleum

BY FRANK P. PETERSON

Member A. I. M. E., A. S. M. E., Amer. Chem. So. Managing Director Frank P. Peterson & Company, Engineers, Tulsa, Okla.

The accompanying paper was read before the Tulsa Chapter of the American Institute of Mining Engineers, February 26th, by Mr. Peterson. The writer has specialized for the past nine years on those details of technology having the lighter petroleum fractions to consider in their increasing commercial importance.—Editor.

EARLY in the history of American crude oil production vacuum was applied to the space in the casing of the wells. The initial application was made on the theory that the creation of a reduced pressure in the well would focus the capillary movement of the oil in the sands, accelerate the flow of oil, raise its level in the well and increase the output. This result was obtained, exactly as anticipated, and the experiment, from the standpoint of accelerated oil yields, was an entire success.

Many questions, however, became involved in the industrial and commercial application of the idea. In a sense the measure has in some cases partaken of an outlaw coloring, because one producing interest would often move in this direction without consulting or advising its immediate neighbors. And, even when consultation has taken place between neighboring interests, harmonious action could not always be secured because much divergence of opinion has always existed between individuals as to the ultimate value and effectiveness of the measure.

Application of vacuum to wells penetrating any strata area energizes the flow of oil not only to the individual wells but to the group of wells and the strata area which these wells penetrate. Consequently, offset wells on adjoining properties penetrating the same strata will reflect immediate decrease in oil production unless they, too, be protected by the same extent of vacuum. Dissensions arising between neighboring operators from this cause have been so frequent as to bring about the passing of laws for regulating the application of vacuum in several states.

Must Give Notice

In Oklahoma, for instance, if an operator proposes to apply vacuum to his oil properties he must issue notice to his neighboring operators and at the same time to the State Corporation Commission. By this process the State Commission becomes an arbiter or referee thru which the community interests may be protected in unified action for the development of this stage of operation. Prior to development of, or in the absence of this legal regulation, those operators who understood and appreciated the science involved in its application, were, perhaps, justifiably reticent in the publication of results, since it was a competitive efficiency measure. Consequently, much that might earlier have been established as standardized data was held back or lay dormant in their files.

Not until 1911 was the nucleus developed, which is leading to the general acceptance by oil operators of the universal application of vacuum to wells producing petroleum.

In 1911 the writer mentioned seriously the subject of vacuum in the salvaging of gasoline or light petroleum naphthas from oil well gas in a trade brochure entitled, "The Production of Gasoline from Natural Gas," which was published by the Bessemer Gas Engine Company, in the interest of the then infant natural gas gasoline industry. In the years intervening the industry has been exploited to such an extent that in 1918 casing-head gas, "wet gas," as it is termed, was the source of 400,000,000 gallons of gasoline. In the meantime, too, instances have arisen which have demonstrated that the application of vacuum has its limitations as will be mentioned later.

Threefold Results

In the present status of the art the resultant sought in vacuum application is threefold.

a. Accelerated and increased yield of petroleum oil.

b. Increased yield above ground of petroleum gas.

c. Increased saturation of the lighter gas issue from oil wells with the intermediate series of hydro-carbons ranging between a stable petroleum gas and a stable petroleum oil. A stable gas or liquid in the sense employed here is a gas or liquid which maintains its state within the normal range of temperature and under atmospheric pressure.

The resultant, a, is being realized (exceptions to be noted) in varying degrees determined by the following factors:

1. Intensity of vacuum and continuity of its application.

Following the general principles involved in the application for reduced pressure the more perfect the vacuum, the more effective the results. The application must be continuous once it is made. Relaxation of vacuum once applied in a well, most frequently and directly, is followed by great deceleration of oil yield, sometimes complete cessation; and, if vacuum be abandoned, the return of the well to a normally satisfactory yield is often delayed by weeks and sometimes months of time, and a permanent subnormal yield after application of vacuum for any considerable time may be theoretically anticipated, if it is finally, permanently abandoned. In practice the foregoing statement (1) is modified by certain field conditions, for example, the porosity of the oil producing strata, the character of the oil itself and the intelligence of the application (e. g., the cleaning out of the wells, the lowering of the tubing, etc.)

2. An open porous structure (e. g., Berea sands of southeastern Ohio and contiguous West Virginia areas) will show a maximum acceleration of oil production and the close-grained, finer sands a minimum. The character of the structure immediately surrounding the well is often profoundly modified by the glycerine shot.

(Continued on Page 18)

Mining Engineers Discussed Oil And Gas From Production Standpoint

Staff Special

TULSA, Feb. 27.—Several papers of particular interest to the oil industry were read at the annual convention of the Tulsa Chapter of the American Institute of Mining Engineers here February 25 and 26. Two of these papers, one on the application of vacuum to oil wells to increase production, by Frank P. Peterson, petroleum engineer of Tulsa, and one on appraisal of oil properties by Earl Oliver, head of the land department of the Roxana Petroleum Company, are published in full in this issue.

The following officers for the coming year were elected at the afternoon session, February 26: Dr. J. J. Rutledge, of the U. S. Bureau of Mines, of McAlester, Okla., chairman, Alf G. Heggem, petroleum engineer and producer, of Tulsa, past chairman; Alex McCoy, technologist for the Empire Gas & Fuel Co., Bartlesville, chairman representing Oklahoma; J. A. Udden, geologist, Austin, Texas, vice president representing Texas, Arkansas and Louisiana; R. C. Moore, vice chairman representing Kansas; C. L. Severy, of Pemberton & Severy, geologists, Tulsa, secretary and treasurer.

The following executive committee was elected: Frank P. Peterson, Mowry Bates, Tulsa; M. J. Munn, Tulsa, and R. J. Eckes, Houston Tex.

The convention presided over by Chairman Heggem began Tuesday morning with a business meeting. Tuesday afternoon Mr. Heggem spoke on "Production Curves of Individual Oil Wells," Mr. Peterson and Mr. Oliver read their papers, and R. R. Shidel, of the Empire Gas & Fuel Co., read a paper describing in detail the results obtained in cementing wells to shut off water in the Kansas fields.

Tuesday evening the mining engineers were entertained at a dinner and smoker at the Hotel Tulsa.

On Wednesday morning other papers were read and the convention closed with the election of officers Tuesday afternoon.

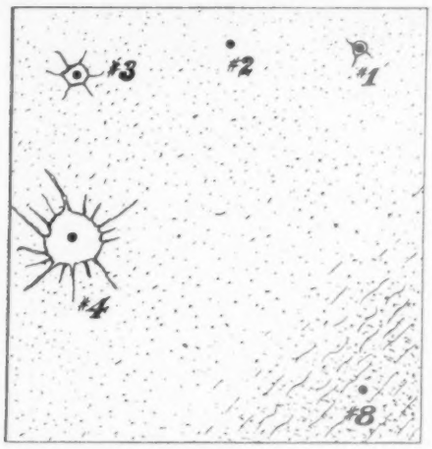


Figure W
Indicating a Plane Cut Through a Producing Sand at the Shothole Level of the Oil Wells

Let us assume that Fig. W represents a plane, plan view, cut thru a producing strata just above the well bottom at the mid-position of the shot holes. Well No. 1, we will say, has been subjected to a light shot; well No. 2 has had no shot; well No. 3 has had a shot of medium intensity; well No. 4 has had a heavy shot. Assume further that scientific and intelligent application of vacuum has been made, the wells properly cleaned and that the normal resultant is taking place. Well No. 2 will evidence continual difficulty to keep it open and pumping successfully, if paraffin solids predominate in the oil, while well No. 4 will evidence a minimum of this difficulty.

Character Significant

3. The character of the oil itself is significant especially as regards the presence of paraffin residues. If the oil is strongly impregnated with the paraffin solids, interference by paraffining of the pores adjacent to the well will be proportionately less serious in the wells subjected to the heaviest shots by reason of the greater exposed strata area acted upon by vacuum. Once, however, this greater area becomes impregnated with the solids, the difficulty of overcoming the trouble may also be greater.

The slight degree of refrigeration incident to the lowering of the pressure, the lowering of the vapor tension and the incidental loss of the volatile naphtha solvents, all tend to precipitate the paraffin in the oil as it enters the sphere of action, and the sand filter does the rest. The strata pores around the well are clogged and closed and the flow of oil to the well obstructed. The lightest oil, the one most free from paraffin, asphaltum, or other solids will yield the maximum of increased oil production. Conversely, the oils which approach the maximum content of solids will yield the minimum of effective results under application of vacuum.

We may refer also to Fig. W for discussion of the exception, above noted, wherein application of vacuum may not be successfully made. As drilling operation approaches well No. 8 let us assume that the strata hardens and becomes exceedingly close, so that the movement of gas in the strata is not affected to any material extent by differentials of pressure. Then, the resultant in accelerated oil production may be *nil*, and the application of vacuum may not be beneficial in wells penetrating strata of this character.

Assume, too, that the stratum dips to a lower level in the direction of well No. 8, and that at this point it is underlaid by a water stratum. If the drilling be not handled with care or if the shot be not properly set, or, if gauged in excess of the safe amount (or notwithstanding all this), the effect of vacuum application may be to flood the well with a disastrous amount of water to its complete destruction or the equivalent of this, so long as the vacuum is maintained. These are known factors negative to the successful application of vacuum universally.

Also, resultant, a, may not be realized in strata of a loose character until after cleaning of the wells.

Reference to Fig. X will illustrate how cavings or accident, F, that move more readily with accelerated oil flow may settle around the bottom of the tubing and shut off the oil from the bottom valve, thus retarding or completely withholding the oil flow from the pumping barrel. If the cavings be allowed to accumulate till they close the perforations in the tubing below the bottom or standing valve, K, the result can only be negative; and lease operatives unfamiliar with this stage of lease work (application of vacuum) may condemn the procedure before it may have a chance to demonstrate success or failure.

Skill Is Required

An outline of some of the details of operation in the application of vacuum is justified in discussion under that phase of the subject, since, in the application of vacuum there is involved no little skill and judgment upon the part of the operator.

Under b, "increased yield above ground of petroleum gas," the data summarized to date does not give a definite factor nor is it likely that such a factor will be worked out in any even ratio with factors definitely known.

There is a tendency toward the conclusion that application of vacuum to oil wells may increase the volume yield of casing-head gas in some ratio comparable to the increase of crude oil yield from the same well. This resultant may follow; in fact, apparently does; but the writer's observation is that the increased volume of gas delivered from the well will be only of short duration as compared to the increased oil yield. Undoubtedly the porosity of sand and the varying resistance offered by the textures of different sands will vary somewhat the time factors in which an applied vacuum will serve to remove that excess of gas residing in the strata which will bring the strata to a new condition of equilibrium with the reduced pressure in effect.

Cases have passed within our observation in which only three to four days apparently were needed for gas volume under 10″ to 15″ mercury vacuum to reach a normal volume only slightly in access of that previous to application of the vacuum. Other cases have shown elapsed time of four to six weeks for removal of the "Flush" gas volume due to vacuum application of the same extent, namely 10″ to 15″ mercury, and for the application of the full range of vacuum within practicable attainment, say 25″ mercury, it is likely that 990 to 120 days will cover the period of excess flow over and above that which will be considered as settled normal volume resulting from the change of pressure in the well.

A parallel condition, so far as increased gas volume due to reduction of pressure is concerned, should be expected to develop and does develop when a group of wells have been held under 10 or 15 pounds per square inch, this pressure suddenly released and the wells allowed to flow wide open. Such conditions as this have been observed many times, and the increased volume of "Head" of gas flow is momentary.

If we refer to Fig. X, which is intended to represent a well section at the producing level, we will have observed that as the oil flows to the well hole from the adjacent strata it will leave that portion of the strata which is no longer delivering oil to the wells more or less completely impregnated within its pores with oil which remains by adhesion and capillary attraction. And within the angle, L, of the converging lines, 1, 1, (Fig. X), we may assume that an area will develop, with the natural draining of the strata, where petroleum gas and the oil of the strata have previously resided in close proximity and under considerable pressure in the pores of the strata.

Vapors Will Remain

In this area will reside, after the natural flow drainage, as far as oil is concerned, oil and gas and the intervening vapors. The casing-head gasoline industry has shown us what this vast accumulation of condensible vapors may be. Having a specific gravity greater than atmospheric air, these vapors would, in absence of application of vacuum, remain to a great extent where they are with only the natural flow depletion of oil strata. Whatever increase in the total volume of gas occurs by removal from the strata of these heavy vapors, which would remain there at atmospheric pressure, must be credited to vacuum application.

It is to be supposed that the angle of flow of crude oil toward the well hole may take, in some sense, the position of the lower of the two converging lines 1, 1, of the Fig. X. As the mobile oil level lowers in the stratum the sand body will be bared in the form of a large inverted cone. Vacuum, or any decrease of pres-

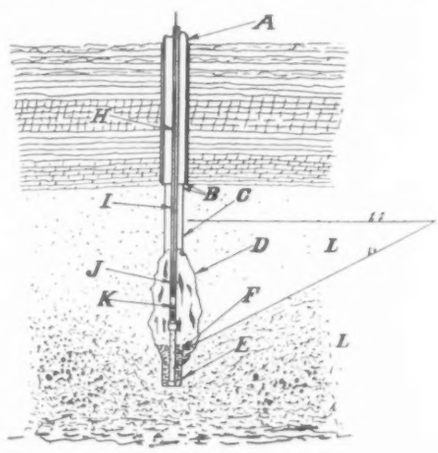


Figure X
A—Drill Hole. B—Drill Hole Reduced for Setting Casing. C—Uncased Portion of Hole Above Shot. D—Shot Hole. E—Bottom of Well. F—Cavings and Sediment. G—Casing. H—Tubing. I—Sucker Rod. J—Working Valve. K—Standing Valve. LL—Producing Stratum

GMC Trucks at Pre-War Prices

The announcement of a reduction of $280 in the price of the GMC Model 16, ¾ ton truck, is good news to truck buyers.

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We are making the same high grade trucks that the government selected and standardized after they had been proved by years of government service and had successfully stood every test, under official scrutiny.

The reputation that GMC trucks have made, not only in government service, but among the best business concerns throughout the world, is one we are proud of.

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sure within the well hole, tends to set up an accelerated gas movement for every increase of differential of pressure between that existing in the well hole and the remote areas of the strata affected. Thus much of what would have remained as gas and vapor forever locked within the bosom of the earth will be yielded up for salvage and constitutes the indefinite and not easily determined increase in the total volume of gas over and above that which the natural pressure would ever produce.

Resultant, c, is almost equally important with the accelerated yield of petroleum from oil wells as brought about by intelligent and successful application of vacuum.

Opinions Vary

Much vigorous contention has arisen, even reaching the courts, as to where removal of resident vapors in the oil sand by application of vacuum ends and where the removal of light vapor constituents from the exposed oil under vacuum effect begins. The testimony from which evidence in these cases have been deduced has left the matter, so far, unsettled. It is perfectly logical to conclude that it is likely to remain unsettled.

Observance of the sketch, Fig. X, will indicate that with rarified atmosphere, be it gaseous or otherwise, in the chamber D, saturation of that atmosphere with the heavier constituents available will be proportional to and increasing with the extent of vacuum applied.

Character of the oil and porosity of the sands are again factors of importance, and combining with these the age of the wells and the extent (reservoir capacity) of the body of sand penetrated will be most noteworthy as sustaining a maximum resultant in output of those intermediates known as natural gas gasoline. Vast bodies of producing sands, such as those of the Childers area, Nowata county, and the Glenn Pool, Oklahoma, have shown yields of maximum gas gasoline under vacuum application.

The crude oils in these areas are not exceptionally noted for high percentage of lighter constituents. In fact, by comparison with crude from the Cushing field, that of Burkburnett, Texas, or with crudes from southeastern Ohio and the West Virginia areas, Childers and Glenn Pool crudes are deficient. Yet no areas anywhere have shown yields in natural gas gasoline comparable to those first above mentioned. Both these areas are 10 to 15 years old. Both bodies of producing sands are relatively very large. The sand structures disclose under the microscope a large reservoir or carrying capacity.

The latent natural conditions were physically most favorable. And what is now further apparent, the gradation in the chemical composition of the petroleum body stored in these sands was peculiarly and unusually favorable thru the range of intermediates now classified as gas gasoline. As a result this product has now been in process of removal for about 5 years at a rate which has shown surprisingly little depreciation.

Results Less Desirable

The less favored areas in chemico-stratigraphic resources show, directly, reflected resultants less and less desirable in the degree of saturation produced by vacuum, until, as we come to the outlying small, stringent formations of sands, the application of vacuum shows in many cases but little advantage, and it is sometimes rather difficult to predetermine whether the necessary investment may be a profitable one to make.

Naturally, following the conclusions above reached, is a question of the available extent of materials for saturation of the lighter gas body with the intermediates of the light naphtha or gas gasoline class. If a carburetor runs dry, the air passing thru it will fail to develop combustion in the motor; so, if a sufficiency of saturation material is not present in a stratum from which gas is being withdrawn, the gas will fail to develop its proper saturation complement, no matter how favorable other conditions may be. Cases seemingly embodying this condition have recently come within our observation.

As a summarized conclusion with reference to this phase of vacuum application, namely, salvaging of petroleum intermediates commercially designated as "casing-head gasoline," one most important statement may be made. Vacuum is not only the means of accelerating the yield of this product, but it is also the means of lifting to the surface and delivering to industry a vast amount of this material which could never otherwise be had. This, alone, justifies universal application of vacuum to oil wells, wherever conditions successfully permit, and until any other equally successful method may be developed or found.

Oil operators are, as a rule, men of intensely practical views. So much of essential and vital purport must needs be accomplished thru the feel of the drill cable and the sensed vibration of the walking beam that an attitude for open reception of theory not clearly set forth in concrete form is not always maintained. Consequently, as previously intimated, the question of ultimate value of effectiveness of vacuum is frequently raised. Outside of the exceptions noted, the question hardly admits of debate.

Visualizing Conditions

Reference to Fig. Y is made for visualization of the conidtions involved.

Let the line A-B represent a level plane. Let the oil sand lay in the indicated position S, S. The stratum is seldom, if ever, uniform, level, or regular in formation. There will be high spots, G; low places, F, and tight and loose spots with fissures and breaks.

The well positions C, D, E will drain by natural flow their respective immediate areas with due rapidity and at a satisfactory rate until the natural or "rock" pressure on the gas (where gas is present) is run down low. But, thereafter,

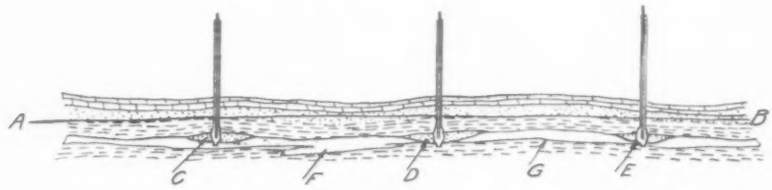
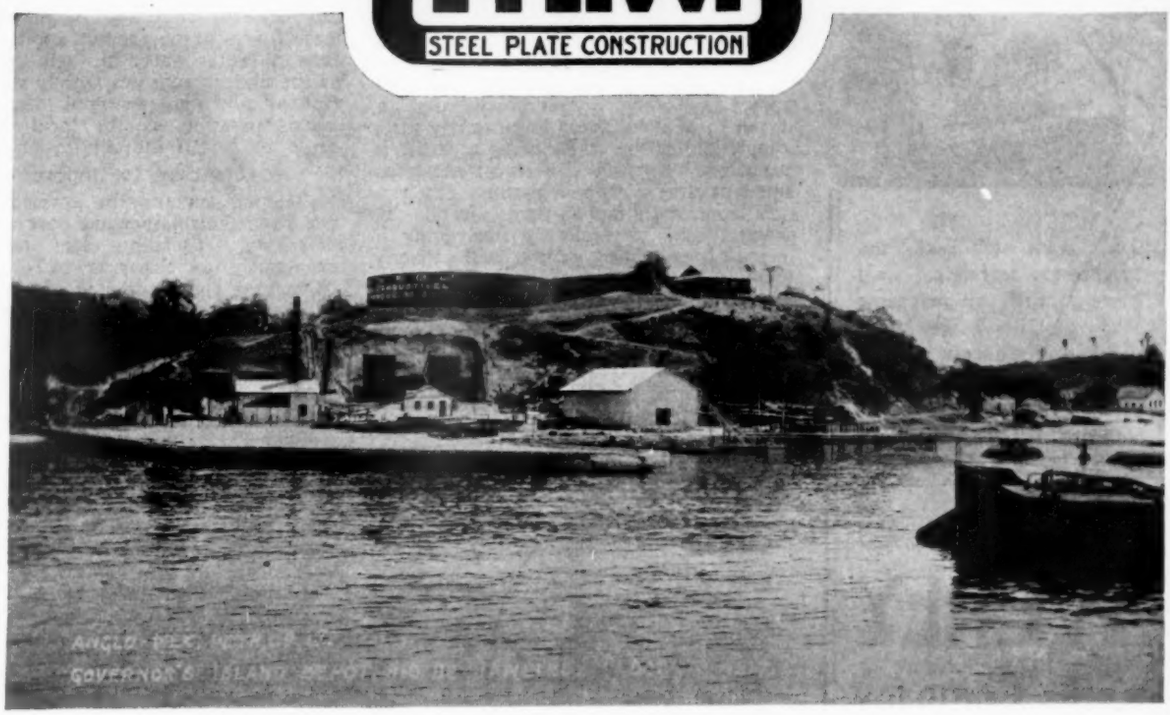


Figure Y

P.I.W.
STEEL PLATE CONSTRUCTION



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the intervening oil in mid-areas between wells will move sluggishly, and not at all in the trapped, low positions or where the path of flow might have to be circuitous around a hard spot in the sand. Result of vacuum will be self-evident.

One might conclude that where gas is practically absent in the strata, e. g., some North Texas (Wichita Falls) areas, effect of vacuum would be least productive of results. Practice demonstrates the contrary. Swabbing operation, usually resorted to in these areas immediately after completion of the wells, gives a result in initial yield from the wells of the combined natural flow and vacuum acceleration from newly tapped sands. While this practice may be seriously misleading in terms of estimation of the well capacity, there is no question of the effectiveness of the method of producing oil. The

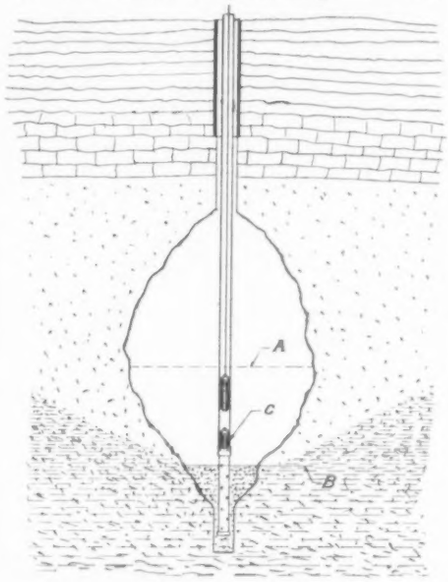

Figure Z

initial or "flush production" of crude will be disproportionately heavy and the rate of depletion high.

Practical Details of Operation

Probably in no branch or detail of the industry is skill and experience of such vital value as in application of vacuum.

Once the application is made all well-heads must be kept sealed most diligently. When it is necessary to disconnect a well for cleaning out purposes, when the casing will be opened, the vacuum connection should be closed entirely. When tubing only is to be opened for pulling rods, the cock or valve in the vacuum line should be opened sufficiently to relieve gas pressure in the casing under field conditions where communication may not be set up between wells. In nearly every case the cock may be left wide open, but regard must be had for the exception in which the lower end of the tubing might not be fluid sealed against in-flow of air thru a defective standing valve.

The mistake is most frequently made by inexperienced lease forces of closing the cock or valve in the vacuum line at the well-head for pulling rods. This develops sufficient pressure in the wells to blow the packing at the two casing-head joints, never too secure in the old standards of these fittings, and the well is thus left in a leaky condition.

It is a generally accepted theory that gradual, slow development of vacuum produces less fouling of the well by inflow of sand or other detritus. The application of a sharp drop in well pressure would tend, at least theoretically, to move detritus into the hole to a maximum degree. The character of the sand will have a large part to play at this stage, but, admittedly, the skill and judgment of the lease forces in the vacuum application will have a larger part; in fact, the success of the undertaking lies wholly within control at all times without detriment to lease operation, if the local conditions favor or permit the application.

Cleaning Is Important

Cleaning out and the lowering of tubing have their important part in the undertaking. Cleaning does not follow necessarily as the rule of consequence of vacuum rightly applied. In some cases it does necessarily follow. In some cases the need has already existed; vacuum emphasizes it. The previous care and management of the wells is a large factor.

The wear and tear (cutting) of valve cups is frequently increased over a period following vacuum due to accelerated movement of fine sand with the oil.

The lowering of tubing is a procedure related directly to depletion of the oil body and the lowering of its level in the sand. It will be affected also in accordance with the following indefinite conditions which develop:

Fig. Z is a representation of the shot hole at some point above the bottom of the well with a sketch of the working barrel, the later detail magnified. The diameter of the hole is a function of the size of the shot and the character of the strata. It may vary from 3 to 60 feet. Let us assume a width of 20 feet and consider the condition with the well pumping and no vacuum at the casing-head.

Some Factors

The pumping rod draws 29.9 inches vacuum as a maximum, and under working conditions with clearance oil-sealed, approximates this very closely. The absolute pressure at B is 14.4 (factor X) plus the weight of an inch column of oil A-B, which we will call factor Y. The third factor involved is a reducing factor due to friction, viscosity and surface tension which we will call factor Z. The effective pressure then at B is represented by X plus Y—Z. For the sake of illustration, assume the oil level A two feet above B, the highest perforation of the working barrel. In the course of the pumping, the level A drops to B, the oil to the calculated volume of 80 barrels having been pumped to the surface.

Now consider the effect of a vacuum application to the extent of, say, 26". In this case the absolute pressure at B when the well is pumping is approximately 1½ pounds (0.1119x14.4), plus the weight of the inch column of oil, A-B, assumed as two feet, with the deduction as in former cases. Depending upon the character of the strata, detritus, debris, etc., in the immediate neighborhood of the tube perforations, this reducing factor may equal the 1½ pounds differential pressure before the oil level has fallen to B. The calculated 80 barrels in the former instance will not be realized, in this latter case, until the well has been cleaned (lessening factor Z) and the tube lowered (increasing factor Y).

This explains and makes perfectly normal the observed fact that upon the initial application of vacuum, or upon increasing the vacuum, it may become necessary to clean the well and lower the tubing.

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(30)

Correct Methods For Appraising Oil Bearing Properties

BY EARL OLIVER

Head of the Land Department of the Roxana Petroleum Company, Tulsa, Oklahoma

That the perpetual tendency toward optimism of the oil producer, coupled with imperfect methods of appraising the amount of oil that could be produced from a given property, has caused more money to be spent in producing oil than the industry has paid back to the producer in the aggregate, was the opinion expressed by Earl Oliver, head of the land department of the Roxana Petroleum Company, in a paper read before the annual convention of the Tulsa Chapter of the American Institute of Mining Engineers at Tulsa, February 25th.

The opinion of Mr. Oliver, who has wide experience in land and lease values in his work with the Roxana, coincides in a general way with that of many experienced oil operators. They believe that the amount of oil produced in the Ranger and other north and west Texas fields will never justify the fanciful prices on acreage which have been run up by lease traders and fake promoters and which legitimate operators have to meet if they would operate in those fields. Mr. Oliver's paper follows.—Editor.

THE term "Oil Property," as used in this discussion, is meant to include any type of easement or grant under which petroleum might be produced, ranging from the mere right to drill on undeveloped "wildcat" acreage up to a fully developed oil property.

The values of an "Oil Property," as above defined, vary widely according to the use for which it is intended. Certain of the definite viewpoints from which an oil property might be valued are that of:

1. The speculator.
2. The fraudulent stock promoter.
3. The refiner and pipe line owner.
4. The oil producer.

It is true the market value of a property is usually a combination of some two or more of these influences, and occasionally a combination of all of them, but we prefer to treat each viewpoint as distinct from the others, and allow the reader to make his own combination in such proportions as his inclination and property seem to require.

This paper will treat the subject from the viewpoint of the oil producer. However, the first three named influences have such bearing on the cost of property to the producer and on the price he might obtain by its sale as to warrant brief reference herein.

First: As to speculative value. Speculation, particularly lease speculation, is a parasitic growth on the oil industry, healthy enough, but of no economic value. The class of property usually dealt in for this purpose is the undeveloped lease. Its speculative value perhaps has some relation to its probable productive value, but is most frequently a product of temporary excitement due to local development. The lease speculator, seeking out the trend of development or securing early information regarding a proposed test or a new discovery, immediately secures leases whose market value will be increased when the existence of such development becomes more widely known.

Unearned Increment

His profits are pure types of the unearned increment. Not proposing to spend money in exploration, he can afford to compete in purchase with the operator who, in addition to bonus paid, must spend large sums in testing out his own acreage and that of the nearby speculator as well. It has a tendency to compel unduly high bonuses. The so-called "checkerboard" system of leasing wildcat acreage of the larger companies is on the same principle of attempting to secure the benefit of money expended by others in testing, but most of them remove the obnoxious holdup feature by contributing toward such testing by others in proportions to the benefit they themselves secure.

Second: Fraudulent stock promotion value. Fraudulent stock promotion, as contrasted with lease speculation, is an unhealthy, disreputable growth, and justifies mention here only to call attention to the burden it places upon the oil industry. The value of an oil property for this purpose has no real relation to its productive value, but such property is selected for its adaptability to a fantastic tale of fabulous earnings to draw money in pitiful dribs from simple, ignorant, and usually hard-working laboring people with small savings.

Consequently, the promoter pays for leases suitable to his purposes prices entirely out of proportion to their probable economic value. A few such prices paid in a locality immediately influence owners of surrounding unleased areas to the extent that the legitimate operator is compelled to meet such prices. A wireless system is slow in comparison with the speed with which the news will travel in a rural locality that "Tom Jones received $750 per acre for his quarter section three miles southeast of the new well brought in over in the next township."

The lease speculator and fraudulent stock promoter, while entirely dissimilar in their standard of ethics and respectability, have, therefore, this in common—they both tend to place fictitious values on prospective oil producing areas before they get into the hands of the oil operator, and which values have little relation to their economic value. The impossibility of determining exact economic value, the knowledge that other men are paying like prices, and the optimistic spirit of the operator generally leads him to meet these fictitious values and pay prices for undeveloped leases, especially in the vicinity of a new discovery, entirely out of proportion to their chances of being profitably productive.

Have Economic Basis

A third valuation differing from that of the oil producer as such, and unlike the two first named in that it is fundamentally economic in its basis, is that of the refiner and pipe line operator.

Prior to the year 1888 the American oil industry was operated in two distinct divisions—first, that of the producer, who brought the oil to the surface, and, second, the refiner, who purchased the crude oil at the well and carried it thru all remaining phases, even up to and including, in some instances, its sale to the consumer. However, about the date mentioned would-be competitors of the then dominant refining interest, recognizing the absolute necessity of owning and controlling producing properties as an insurance against disturbance of their crude supply, began acquiring oil producing properties.

The dominant refining interest quickly followed the same practice, and such practice has constantly grown until now the greater percentage of production is owned and controlled as a necessary adjunct to the refining and transporting branches of the industry. Now pools, when opened, have diverse ownerships, but eventually gravitate to a great extent into the character of control mentioned.

The Oil Producer

Thus, while to the oil producer, as such, an oil property has value only to the extent of the margin of profit between the cost of the oil as produced and his receipts for it as sold in its crude state, to the refiner and transporter it has a double value—one of which is identical with that of the producer, and the second is that it stabilizes and makes secure his more important business of transporting and refining provided his producing properties are so situated as to make his production available for his facilities. Its value for the latter purpose is frequently of much greater importance than for the former.

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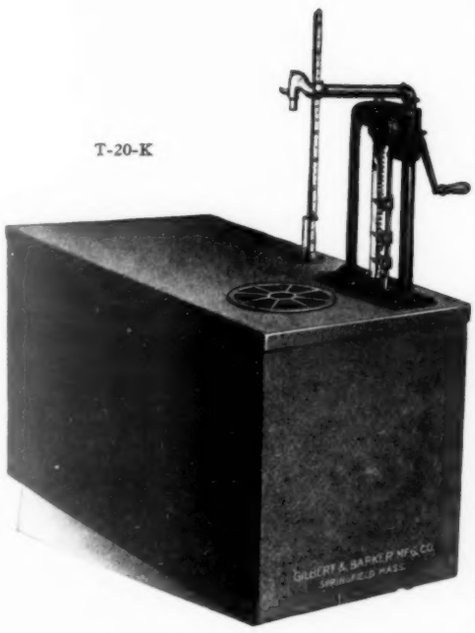

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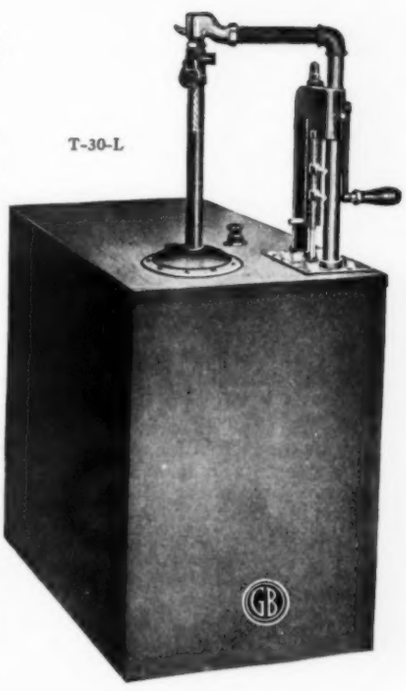

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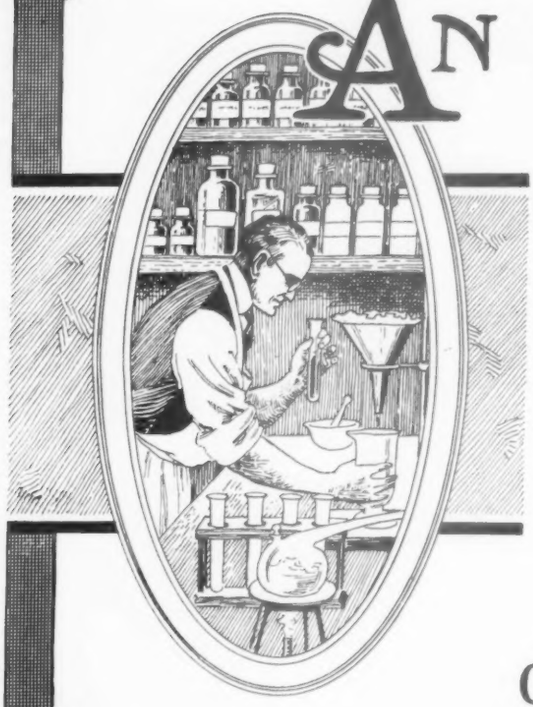

AN INTRODUCTION

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value of an oil property to a producer as such (stripped of its speculative feature) is simple in principle and is nothing more or less than the present worth of the aggregate margin of profit between the expenditures for producing, saving and disposing of the oil in its crude state and the price received for same. To ascertain such values is a simple matter in accounting—of balancing expenditures against receipts and introducing interest charges.

It differs little from the average bookkeeper's problems except that it is turned around. The bookkeeper balances expenditures against receipts on business that is past. The oil property appraiser balances expenditures against receipts on business of the future. To his bookkeeping ability he must, therefore, add the ability to see in the future—and under ground as well.

His principal difficulties are to determine the number of barrels of oil the particular property in mind will produce and the price per barrel he will receive for same. He has several other problems such as the cost of developing, and the cost of maintenance and operating, but these are simple and easily disposed of provided he is able to accurately forecast the first two named. It would be well, therefore, to study these two at some length.

First. As to the amount of oil that will be produced.

Until within very recent times there has been no one well established widely used and generally accepted method of determining the probable future production of an oil property. Scientists had evolved general theories as to the laws controlling the accumulation of petroleum which had much merit. In a large way those theories were helpful. It must, however, be confessed that in their early application, or rather misapplication, to individual small tracts for valuation purposes they were disappointing.

Without discounting the immense benefit the pure scientist has done and is doing the industry thru evolving general theories, yet in the field of valuations he introduces too many assumptions to make his appraisals safe as a basis upon which to invest large sums of real money. He fails to keep his feet on the ground. Consequently, as between the scientist, with his many theories and assumptions, and the old experienced oil producer, who knew nothing about porosity, extractable content and theories of accumulation, but who did know oil wells and had the details of a few properties stored back in his mind for the purpose of comparison, the oil producer was the more successful in judging values of oil properties.

Lacks Inclination

Nevertheless, the average oil producer, whose real business is operating the properties he controls, has neither the inclination nor the time to collect data that would give him a wider vision than his own experience furnishes him, and is handicapped to that extent. These two men represent the two distinct types of appraisers and appraisals that have been known to the oil industry for many years.

The difference between them might be better understood by stating that the early petroleum engineer, in purchasing a race horse, would have investigated carefully the history of the dam and sire for several generations back, ascertained what food and treatment the dam had prior to the foaling, would then have given a hasty glance at the horse itself and concluded, that in view of the record of its progenitors and the early influence brought to bear upon it, it should be able to do a mile in two minutes flat, and, accordingly, purchase it on that basis. Whereas, the practical oil producer, purchasing the same horse, would send it around the track, time it and buy it on the speed shown, in ignorance of inherited and prenatal influences.

A New Type.

However, there is a new type of petroleum engineer being evolved. He knows the theories of the scientist, but he demands that they shall be measured up with actual results. He knows what percentage of structures in a given locality have been found productive or barren upon being tested. He knows, from compiled data—not from theory—where oil accumulates. He calculates oil content per acre—not from counting voids in sand—but from counting barrels actually produced from similar already exhausted areas.

He measures the numerous theories of his eminent scientific predecessor with actual results and from such test those theories stand or fall or are given such consideration as the tests warrant. His business is the collection of complete data from innumerable properties so that he might know what the habits of petroleum really are, instead of assuming for it certain habits in keeping with his ideas of what they should be.

This new type of petroleum engineer is confidently expected to develop methods of determining the probable productive-

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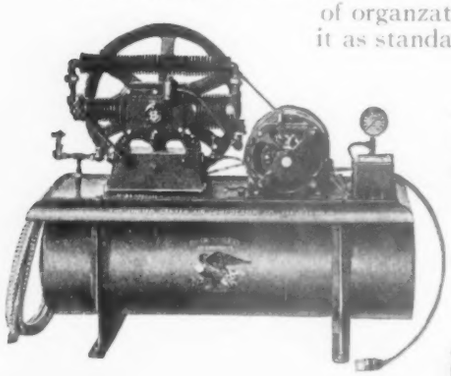

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ness of certain areas with much greater accuracy than methods now generally available will permit.

However, until such methods and data are available, it is necessary to use the older general principles and among them the writer has found the following method of approach helpful:

The property is first divided into developed and undeveloped portions. The developed portion is then subdivided into "settled" and "flush" productions, provided the old and new wells are not so intermingled as to make this impracticable. For both classes it is desirable to have production figures extending back by month to the completion of the wells. Should such not be available, it is highly important that they at least run back one or two years, provided the wells are that old.

There will, of course, insofar as it is available, be a complete history of each well and full data regarding same, including, among other things, date of completion, initial and present productions, thickness and depth of sands, casing record, gas and water production, vacuum application, etc., etc.

One purpose of all this is to ascertain whether the composite production is made up of comparatively uniform wells, and whether the production figures as shown month by month represent the regular and natural rate of decline, or whether some unusual condition might have been introduced which changed the past production from the natural rate. Should there be such condition, its influence is given such consideration as it appears to warrant, and eliminated if possible from the figures.

On the "settled" production figures a curve is then constructed covering the entire past life of the property insofar as such figures are available.

While properties of the same age differ greatly in their rates of decline, yet each property thruout its entire history is characterized by the same rate of decline, i e., if during the first part of its history it shows a rapid rate as compared with other properties of like production per well and age, it will have a rapid rate up to the point of exhaustion, and in like manner as to medium and slow rates.

After the flush production is off, provided the wells are not unusually large, the rate of decline is so uniform as to make possible for all practical purposes the use of some definite percentage each year from the previous year in case, of course, some extraneous influence does not cause the decline to deviate from its natural rate.

The Decline Varies

Thus, some properties will decline at the average rate of 40 per cent each year from the previous year, while other properties will decline only at the average rate of 15 per cent. Consequently, when on settled production the figures are available on which to construct a curve running back several years, it is comparatively easy, safe and reliable to project the curve to the point of exhaustion.

Emphasis is laid on the point that for valuation purposes of individual settled properties where something more reliable than mere generalities is desired, a general production curve should not be used, but instead the curve of the property itself should be projected.

To illustrate the danger of depending upon a general production curve, the writer has before him curves of several Bartlesville sand properties six to eight

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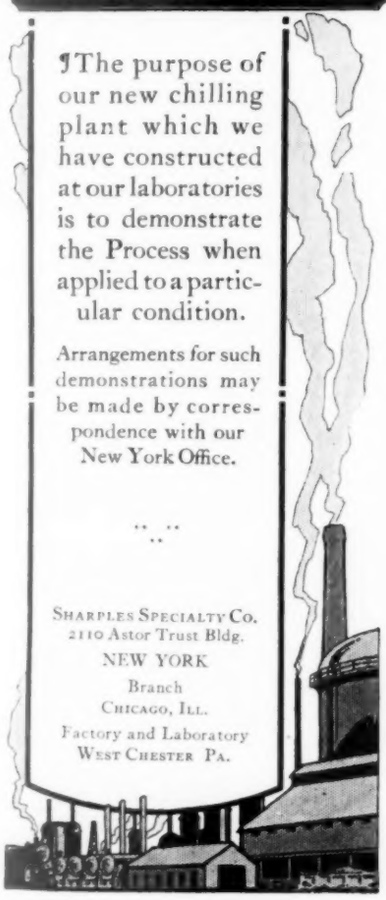

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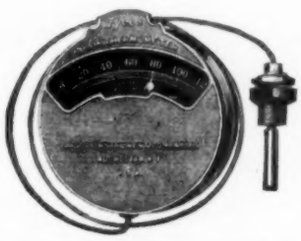

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years old in substantially the same district, and which would ordinarily be considered of the same type and subject to the same decline. Yet, in reality, they range from 15 per cent annual decline on some properties to 40 per cent on others, which means that the first-named, altho having no more present daily production than the latter, will produce three times as much as the latter before exhaustion.

The substance of the whole matter is that every producing property is a type unto itself, and where reliable appraisal is desired, cannot be thrown into any general class at so much per barrel. Each property has characteristics that place it above or below the average and on settled production, located apart from new wells it is, therefore, desirable that its own production curve be projected.

With flush production, however, this obviously cannot be done since there will not have been sufficient time elapsed to indicate a rate of decline. In this case, reliance upon general decline curves cannot be avoided except that care should be taken to select a curve compiled from properties as similar in type as is possible to secure. As a check, data compiled from similar properties as to yield per acre foot is helpful for "flush productions," altho of too general nature to be of assistance in appraising settled production. Briefly, therefore, in settled production, the curve of the property examined should be projected.

Require Different View

The undeveloped portion of a property should be reviewed from an entirely different angle. This will range from so-called rank "wild cat" acreage up to that which is sufficiently surrounded by production as to be substantially proven. It is a rare instance, indeed, however, that any undrilled acreage will be so thoroly proven as to justify a method of valuation which will include assumption of a certain number of locations, with an assumed initial production per well and with applications thereto of a decline curve.

Theoretically, such method appears satisfactory, but it does not work out well in practice. However conservative the appraiser attempts to be, such method of appraising undeveloped acreage generally leads to over-valuation. It is poor practice. Such method starts with the assumption that the undrilled acreage will be productive and then attempts to call to mind all factors of uncertainty for which discount should be made, but some of these will be misled and the property be thereby given a higher rating as to certainty of production than as a rule it justifies.

However, the basic assumption on undrilled acreage should be the reverse of the above—i. e., that it is barren, and then such factors be assembled as will tend to take it out of that class. Perhaps this distinction has not been made clear, and it has reference only to the state of mind of the appraiser towards the property. However, this tendency toward optimism regarding the probable productiveness of acreage has caused much more money to be spent in the attempt to produce oil than the industry has paid back to the producer in the aggregate.

By the very nature of the industry, there must be great individual gains and losses, but yet the industry as a whole should pay its way, and since it does not, in the aggregate do so, it is desirable that this fact be more widely recognized and values adjusted accordingly.

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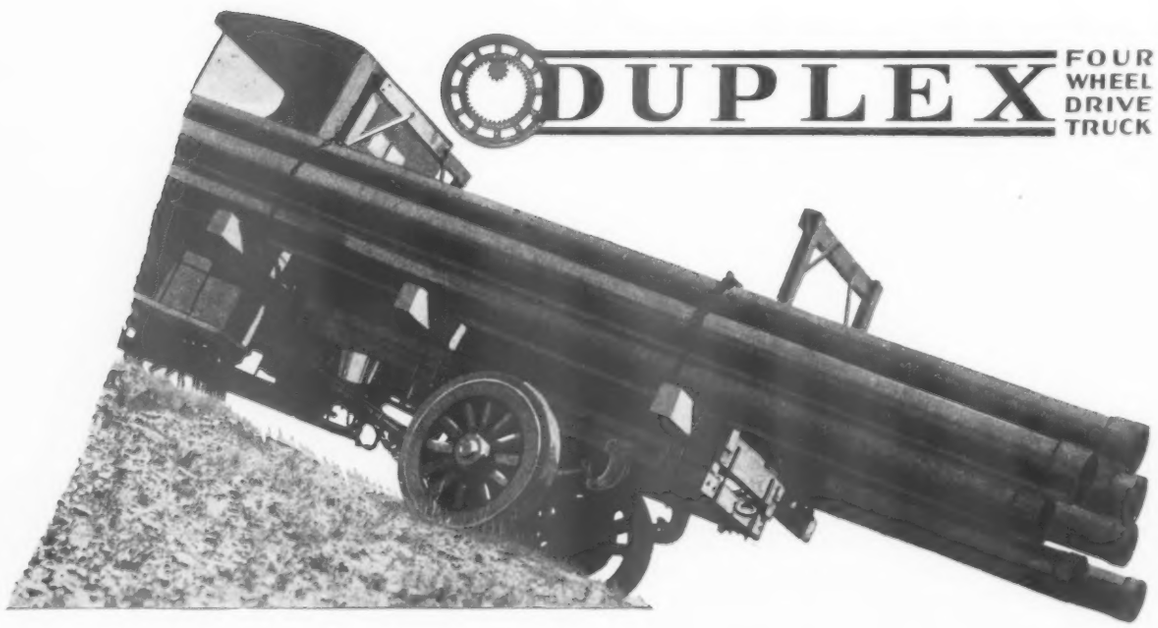

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Intensive Townsite Development Is Turning The Burkburnett Tide

DESPITE new production of 3,500 barrels added in the Burkburnett townsite field of Texas over the week's period, a decline of almost 5,000 barrels daily average is shown, indicating that the long expected falling off in this area of intensive development has begun. Considered in the light of conditions under which the loss counteracts the production from new completions in addition to nominal falling off of older wells, it is apparent that the output of this division of the northern field of Texas has declined 7,700 barrels daily average in the week's period, production now standing at 94,185 barrels.

Similarly, the north field shows a daily average decline of 5,000 barrels to a total of 61,750, from which is apparent that the older development is holding steady and that new completions elsewhere in the Wichita Falls district than the Burkburnett area are responsible for some gain from new production.

Ranger Output 71,000 Barrels.

Treated broadly, the Ranger district forged ahead to daily averages of 70,895 barrels, failing by roughly 4,000 barrels to reach the mark expected of it as a result of "gusher" wells in the territory embraced by the western fringe of the pool proper. This, however, indicates a steady gain, both in Eastland and Stephens counties, which broadly form a part of the district.

Southwestern Comanche county, Texas, gave promise of a new pool when the Humble Oil & Refining Company brought in its Goss test, about 20 miles southwest of Duke-Knowles development and about the same distance south of the western edge of Ranger proper. This well, however, did not hold up to first expectations and at 3,270 feet is making 300 barrels of fluid, of which 70 per cent is sulphur water and bottom sediment.

Drilling Deeper In Oklahoma.

At least half a dozen tests in northern Kay county, Oklahoma, which had either been definitely abandoned as dry holes at various depths, or at least shut down with the intention of abandoning them as unproductive, are to be drilled deeper, due to the proving of the fact that a good oil sand underlies the region of the town of Newkirk at the depth of 3,100 feet. It is believed that the known presence of the productive sand will cause the drill to be set to work in a good many other tests in that territory which had been given up as hopeless.

Interest in deep drilling began several months ago when E. W. Marland drilled in his No. 9 Mollie Miller in the Ponca City pool at a depth of 3,929 feet. This came in for about a 1,500-barrel producer and is still holding up to about 500 barrels a day and bears the distinction of being the deepest producing well in the state.

Development around Newkirk, about 18 miles northeast of the Ponca City pool, found the 3,100-foot sand and now there are eight wells producing a total of more than 3,000 barrels a day from this pay. One of these is the No. 1 Eckley of the Gypsy Oil Company, producing 500 barrels a day. The Carter & Southwestern have two wells on the McClaskey lease, the Carter has three on the Hayes lease, the Diamond Oil Company has two on the Enkelmeier and the Jens Marie Oil Company one on the McClaskey.

Best Oklahoma Test For Week.

The best well reported during the week was an 850-barrel producer brought in by the Gypsy Oil Company in the Osage and the next best was a well estimated good for 500 barrels by the Producers' & Refiners' Corporation in southwestern Okmulgee county.

Late Field News

Staff Special

FORT WORTH, March 4.—Two practically inside wells in Stephens county, Texas, were completed March 1st by the Gulf Production Company, its No. 1 White coming in for 1,400 barrels on top of the pay, which was found at the usual depth. The Fincher test gives promise of being one of the largest wells in the field when drilled in. The White well is only a short distance north of the Fincher lease. The Gulf's No. 1 Taylor, west of Ranger, increased in production from 500 to 1,000 barrels when drilled 15 feet deeper.

FORT WORTH, March 4.—Charles J. Wrightsman, operating as the Wrightsman Oil Company of Tulsa, has made location for his first test in Stephens county, Texas. The location is in the center of the south line of the southwest quarter, Sect. 40, Block 5, Texas & Pacific Railroad survey.

The Producers' & Refiners' Corporation, of Denver and Tulsa, has made location for its first Comanche county test on the C. H. Hodges tract, in the William DeMoss survey.

TULSA, March 4. — The Gypsy Oil Company has a showing for a big well in its No. 4 in Sect. 17-27-8, in the Osage on the tract which was bought by the Gypsy in partnership with the McMan Oil Company, the Phillips Petroleum Company and J. J. McGraw, of Ponca City, at the last Osage sale, November 9. The well is being drilled into the sand found at 2,440 feet.

FORT WORTH, March 4.—Altho unconfirmed here that the Standard of New Jersey is negotiating with the Texas & Pacific Coal & Oil Company for 85,000 acres of leases in Ranger territory on basis of bonus and fifty-fifty operating agreement, oil circles consider this report more likely than previous rumor that the Standard was seeking to purchase entire Texas Pacific holdings for $100,000,000.

The Standard's recent purchase of a half interest in the Humble Oil & Refining Company's stock for $17,000,000 gives it active Texas interests thru a subsidiary, the Carter Oil Company, for which it was understood to be purchased in the name of W. C. Teagle. Other large companies operating on Texas-Pacific acreage are, Prairie Oil & Gas Company, the Sun Company, Mid-Kansas Oil & Gas Company, and one major Independent. Sinclair also is operating some Texas-Pacific acreage.

Sulphur Water Takes Goss Well 20 Miles South Of Ranger Pool

Staff Special

FORT WORTH, March 1.—Until subsequent tests can be drilled in the Sipe Springs district, about 20 miles southwest of Duke-Knowles development in Comanche county, the key to an entirely new area due south of the Ranger pool remains the relatively indifferent completion of the Humble Oil & Refining Company on the Goss tract, which also is about 20 miles south of the farthest southwest producing well of the Magnolia Petroleum Company on the T. W. Connellee tract, along the western fringe of the Ranger pool proper.

As the situation now rests, the Goss test is making approximately 70 per cent of sulphur water and bottom sediment out of a total flow of 300 barrels of fluid daily. Altho there is several hundred feet of open hole above the total depth of 3,275 feet, it had been fairly well established at the end of the week that the water was coming from the productive stratum rather than from above, so that plans were being made to use this test as a source of fuel supply while making another effort to develop paying production in the vicinity.

Second Test to Be Made

A difference of opinion exists among various students of the situation regarding the geological conditions surrounding the Goss test. Some regard it as off structure, whereas others contend that by drilling higher up on the structure it may be possible to get away from the sulphur water present in the syncline and, thus, develop profitable operations in a territory where the Goss test was at first regarded as the harbinger of a new pool in central west Texas. At any event, the Humble Company is laying plans for the drilling of another test in the vicinity, and the demand for acreage that followed first reports of the Goss being good for several hundred barrels of oil will, no doubt, result in additional tests intermediate between this location and both the Duke-Knowles development and the Ranger pool proper.

Reports from Bartlesville, Okla., are to the effect that the Empire Gas & Fuel Company is making ready to drill one or more tests in Comanche county, where it holds acreage, but the definite site of locations to be made is not known to followers of development in Texas. Meantime, other Comanche county tests have failed to develop anything more than previously reported.

The Plains Oil & Gas Company (Wirt Franklin, of Ardmore, Frank Phillips, of Bartlesville, et al), shut down their J. D. Herrington well, northwest of Duke-Knowles development because of lack of storage after the first day's full gauge had shown it good for approximately 530 barrels. It is making no gas and flows only when agitated. The Ohio Fuel Company's Herrington test, about two miles east of Desdemona, is considered a doubtful asset at 3,137 feet.

The Tex-Penn Oil Company's Payne gasser, which has been making 20,000,000 cubic feet over a period of weeks, was to be capped, a condition true also of the Magnolia's gasser south of the Duke-Knowles wells.

Eastland county, where the Ranger pool is located, was without extraordinary development over the week's period. The Magnolia Petroleum Company's No. 1 Harris, not far from the "gusher" district along the western fringe of the field, made 10,000,000 cubic feet of gas and 1,500 barrels of oil from a depth of 3,402 feet. It was chiefly interesting from the fact that it is beyond the Magnolia's T. W. Connellee "gusher," which was one of the show wells of this territory.

The Prairie Oil & Gas Company's No. 5 Slayden, which has not been fully drilled in, is making 1,100 barrels at 3,469 feet, but is without significance, being an "inside" well in the strictest sense. The Prairie's No. 1 Earnest now is making 1,500 barrels at 3,316 feet and No. 1 Hestilow was finally completed for 400 barrels at 3,435 feet.

The No. 1 D. McCleskey, of Warren Wagner et al, on a 75-acre tract where difference had existed with the Texas & Pacific Coal & Oil Company, was completed for a 70-barrel well at 3,422 feet. A settlement is said to have been reached as regards the difference involved by the payment of approximately $100,000.

Gulf Gets Another Davis Well

Production figures down to date give an idea of the development in the principal districts of Stephens county, which adjoins Eastland on the north. There have been few, if any, developments in the way of completions not previously reported over the week's period further than the statement that the Gulf Production Company's No. 2 Davis is flowing oil over the derrick as a result of strong gas pressure. No. 1 Davis is still making 540 barrels.

The Mid-Kansas Oil & Gas Company's No. 1 Jennings, previously estimated good for 2,000 barrels of oil when completed, is still in a stage of incompletion, making 15,000,000 cubic feet of gas and spraying oil. It is in the Chamblis survey, and has been drilled to a depth of 3,435 feet.

Plans were being made at the end of the week to shoot the Sinclair Gulf Oil Company's Ledbetter test, which was drilled to a total depth of 3,433 feet.

Texas Company's No. 1 Billingsley was making 800 barrels daily without having been finally completed; the Texas & Pacific Coal & Oil Company was pulling pipe to abandon No. 1 Pierce at 4,035 feet; Prairie Oil & Gas Company had a showing in No. 1 Powers, but is still drilling at 3,235 feet.

Older Stephens county wells producing are in part as follows: Lone Star Oil & Gas Company's No. 1 Warren, 45 barrels in 2,100-foot pay; Texas Company's A-1 Parks, 100 barrels; Texas Company's A-3 Parks, 200 barrels; Gulf Production Company's No. 2 Fincher, 1,100 barrels; Texas Company's No. 1 Veale, 690 barrels; Texas Company's No. 1 J. C. Curry, 250 barrels; Texas & Pacific Coal & Oil Company's No. 1 Lee, 100 barrels; Texas Company's A-2 Parks, 250 barrels; Mid-Kansas Oil & Gas Company's No. 1 Carey, 370 barrels; Moore & Roeser's No. 1 Russell, 100 barrels; Texas & Pacific Coal & Oil Company's No. 1 Carey, 100 barrels; Mid-Continent Oil & Gas Company's No. 1 Knott, 180 barrels; Texas Company's No. 1 Stoker, 2,400 barrels; Monitor Oil & Gas Company and Pennok Oil Company, No. 1 Swenson, 1,800 barrels; Texas & Pacific Coal & Oil Company's No. 1 Bradford, 300 barrels; Sun Company's No. 2 McMeen, 250 barrels at 2,180 feet, and No. 1, 150 barrels.

Average Production Figures

Total production figures for north Texas showed an average of 132.645 barrels daily over the week's period, the Wichita Falls (northern district having to its credit 61.750 barrels, as against 70.895 barrels in Ranger and contiguous territory. Burkburnett had a daily average of 49.185 barrels, a decrease of 5,000 barrels in the daily average column despite new production that otherwise would have increased the output by 3.500 barrels daily. Electra showed a decline of approximately 750 barrels to 11.670 berrels daily. Other districts such as Holiday, Petrolia, Iowa Park, etc., made up the total of 61.750 barrels daily in this general district.

Wells previously reported in Stephens county, which make their appearance this week for the first time in the daily average column, made up the 2,000 barrels gain in Stephens county, a part of the west Texas division. Stephens county now is credited with 11.235 barrels daily production. Comanche county was barely steady with production daily of 4,155 barrels and the Ranger pool proper, in Eastland county, was good for 54.340 barrels. The remainder of 70.895 barrels daily was distributed among Brown, Coleman, Strawn and Moran development, in each case only a few hundred barrels.

New Wells Develop Interest In Auction

Staff Special

TULSA, March 4.—Much speculation as to how the bidding would run for lands in the Osage at the sale that was to be held March 5 at Pawhuska has been excited by three recent completions of the Gypsy Oil Company on the 480-acre tract in Sects. 17 and 18 in Township 27, Range 8, in the northern part of the county, which was bought by the Gypsy, the McMan Oil Company and the Phillips Petroleum Company and J. J. McGraw for $600,000 at the previous sale November 9.

At the time the tract was bought it had one producing well, the famous Choteau No. 1, making between 5,000 and 6,000 barrels a day. Recently the Gypsy has completed two wells on adjoining locations to the Choteau. One of these is making around 850 barrels a day and another two locations west of the big well was a dry hole. This dry hole, abandoned a few days ago, put a damper on expectations for further development in adjoining acreage, and hence on probable bidding.

On the night of February 27, another well was drilled into 10,000,000 feet of gas which caught fire and badly burned two men. The gas was encountered about 40 feet above the depth from which the other wells are producing oil and the well gives indications of making a good oil well when it is completed.

The fourth well, which is now drilling into the pay sand, has a showing of oil that indicates it will be a big producer. This well is only one location west of the discovery well, and has raised hopes generally in this neighborhood as good producing territory.

Initial and Present Production of Wells In Eastland County, Texas

Staff Special

FORT WORTH, Feb. 28.—Comparative figures on the production of wells in the Ranger district proper over the period from the completion of the Texas & Pacific Coal & Oil Company's original McCleskey in October, 1917, down to February 10, 1919, show that the initial output of the 111 wells covered by this computation had initial output of 80,312 barrels as against daily production on February 10th of 47,509 barrels.

Of these wells, 63 were completed prior to December 10th, last, or within a 13½ months' period, with total initial production of 45,840 barrels. The 48 wells completed in the two-months, period from December 10th, last, to February 10th, had initial production of 34,472 barrels, bearing similar ratio in their first 24-hour gauges to their predecessors.

Present production, however, shows that the 63 wells completed prior to December 10th, last, are averaging as of February 10th, 19,804 barrels. The 48 completed in the two months' period ended February 10th, some of which were first turned in fully only a day or two previously, were making 27,705 barrels.

Of the wells completed and producing December 10th, last, 48 showed a decline in the two months previous to February 10th, of 7,697 barrels. Eleven increased their production, either from drilling deeper into the productive stratum, or from shots, a total of 1,057 barrels together. The four other wells considered as having been completed prior to December 10th, remained stationary as regarding their daily production.

Down to date, Ranger daily average production totals 54,340 barrels from roughly 120 wells as against 51,900 barrels a week previously from 113 wells. Figures included in the accompanying table as regards wells completed prior to February 10th, purport to be exact, and are to be regarded as essentially correct, the figures herein presented from February 10th to February 28th being, on the other hand, approximate. Some of the larger wells in the district are included in the latter figures, notably the Norwood, of the Texas & Pacific Coal & Oil Company; No. 6 Copeland, of John H. Markham, Jr.; the System Oil Company, and others.

When studying production figures as of February 28th, as compared to February 10th, which date the "present production" figures in the table bear, it is well to consider that the Texas & Pacific's No. 1 Butler now is flowing approximately 2,000 barrels after drilling deeper into the pay; the Prairie's No. 1 T. J. Earnes is producing roughly 800 barrels daily after a similar operation; and to a lesser degree a few other wells are producing more oil than the February 10th figures show, because of their having been drilled slightly deeper since that time.

These figures, the reader will understand, take into consideration only those wells drilled in Eastland county, where the Ranger pool proper is situated. That broad contiguous territory, roughly spoken of as Ranger development, and which lies contiguous to Eastland county, is not included.

Company	Farm, Well	Compl't'd	Init'l Prod. Bbls.	Feb. 10, 1919. Prod. Bbls.	Depth Feet
Texas & Pacific	J. H. McCleskey 1,	Oct. 1917,	1200	250	3425
Texas & Pacific	B. P. Davenport 1,	Mar. 1918,	800	300	3429
Texas & Pacific	O. P. England 1,	May 1918,	400	60	3405x
Texas & Pacific	L. Williams 1,	May 1918,	100	3	3421x
Texas & Pacific	N. Walker 1,	May 1918,	510	200	3407
Cunningham et al	D. C. Pratt 1,	June 1918,	30	5	3214x
Texas & Pacific	Floyd Brewer 1,	June 1918,	2000	690	3308
Texas & Pacific	T. Duncan 1,	June 1918,	1000	250	3396
Texas & Pacific	W. M. Meyers 1,	June 1918,	10	3	3410x
Texas & Pacific	J. M. Rust 1,	June 1918,	650	40	3467x
Texas & Pacific	J. W. Shook 1,	June 1918,	150	45	3403
Texas & Pacific	R. C. Stuard 1,	June 1918,	60	20	3405
Texas & Pacific	M. H. Hagaman 1,	July 1918,	65	8	3491x
Prairie O. & G.	Slayden 1,	July 1918,	3800	1100	3445
Plains O. & G.	Barnett 1,	July 1918,	200	19	3195
Republic Prod. Co., and Humble O. & Rfg. Co.	J. W. Jones 1,	July 1918,	4000	450	3493
Heenan & Co.....	Bryant 1,	July 1918,	150	19	3192
Crosbie & Davis	J. E. Crosbie 1,	July 1918,	60	12	3600x
Cunningham et al	R. E. Riddle 1,	July 1918,	10	8	3542x
Joe Bartles et al	Gholson 1,	Aug. 1918,	1200	8	3489
Beaver Valley O. Co.	J. W. Barber 1,	Aug. 1918,	20	30	3420x
Crosbie & Davis	J. E. Crosbie 2,	Aug. 1918,	20	12	1324x-xx
McAlester et al	H. Brasher 1,	Aug. 1918,	10	270	4000
Owen & Wilson	W. L. Yandell 1,	Aug. 1918,	25	13	3410x
Prairie O. & G.	T. J. Earnest 1,	Aug. 1918,	300	75	3307x
Sammies O. Corp.	Dean 1,	Aug. 1918,	30	10	3747x
Sun Company	Allen 1,	Aug. 1918,	240	20	3040
Texas & Pacific	S. W. Bobo 1,	Aug. 1918,	540	300	3240
Texas & Pacific	H. Brasher 1,	Aug. 1918,	100	100	3305
Texas & Pacific	F. Brewer 2,	Aug. 1918,	2000	700	3305
Texas & Pacific	F. Brewer 11,	Aug. 1918,	2000	680	3307
Texas & Pacific	A. S. Davenport,	Aug. 1918,	200	27	3495
Texas & Pacific	S. V. Davis,	Aug. 1918,	1200	800	3220
Warren Wagner	Merriman 1,	Aug. 1918,	2390	700	3275
Prairie O. & G.	T. & P. fee 1,	Sept. 1918,	30	60	3196x
Prairie O. & G.	Keaghey 1,	Sept. 1918,	300	90	3205
Prairie O. & C.	W. Howard 1,	Sept. 1918,	1000	250	3515x
Texas & Pacific	F. Brewer 9,	Sept. 1918,	1100	500	3298
Texas & Pacific	J. E. Butler 1,	Sept. 1918,	300	1030	3360
Crosbie & Davis	J. E. Crosbie 4,	Oct. 1918,	30	12	1335xx
Gulf Prod. Co.	F. W. Taylor 1,	Oct. 1918,	1200	815	3445
Heenan & Coe	Bryant 2,	Oct. 1918,	10	9	3212x
Humble O. & R. and Republic Prod. Co.	J. W. Jones 2.	Oct. 1918,	1200	850	3506
Lone Star Gas Co.	Goforth 1,	Oct. 1918,	150	15	3495
Magnolia Pet. Co.	C. U. Connellee 1,	Oct. 1918,	30	12	1355xx
Magnolia Pet. Co.	W. E. Rock 1,	Oct. 1918,	3000	900	3508
Plains O. & G.	A. J. Harrison 1,	Oct. 1918,	15	40	3260xx
Plains O. & G.	Rust & Weir 1,	Oct. 1918,	10	16	3372
Prairie O. & G.	J. R. Wood 1,	Oct. 1918,	1800	450	3468x
Crosbie & Davis	J. E. Crosbie 3,	.....	20	12	1360x-xx
J. E. Crosbie	Dr. Terrell 1,	.....	10	6	3240x
Ranger-Duncan et al	M. Sibley 1,	Nov. 1918,	30	(show)	3480
Crowell & Gant	Church Lot 1,	Nov. 1918,	1500	850	3280
Heenan & Coe	W. E. Rock 1,	Nov. 1918,	1800	750	3545
Crosbie and Davis	J. E. Crosbie 5,	Nov. 1918,	40	16	1324xx
Texas & Pacific	Floyd Brewer 14,	Nov. 1918,	1200	800	3285
Texas & Pacific	W. R. Hodge 1,	Nov. 1918,	700	1200	3480
Texas & Pacific	J. W. Tibbles 1,	Nov. 1918,	60	5	3435
Texas & Pacific	N. W. Whitson 1,	Nov. 1918,	535	....	3397
Warren Wagner	Merriman 2,	Dec. 1918,	1200	690	3285
Texas & Pacific	R. H. Clemmer 1,	Dec. 1918,	1000	1150	3290
Texas & Pacific	Floyd Brewer 3,	Dec. 1918,	1200	690	3282
Heenan & Co.	W. E. Rock 2,	Dec. 1918,	1000	800	3565
Texas & Pacific	W. L. McCleskey 1,	Dec. 1918,	400	1100	3210
Texas & Pacific	W. Rice 1,	Dec. 1918,	100	340	3425
Texas & Pacific	B. F. Davenport 2,	Dec. 1918,	850	1000	3438
Prairie O. & G. Co.	J. W. Terry 2,	Dec. 1918,	200	300	3485x
Prairie O. & G.Co.	J. W. Terry 3,	Dec. 1918,	200	435	3282
Prairie O. & G. Co.	E. Terrell 1,	Dec. 1918,	6000	4200	3472
Magnolia	E. H. Webb 2,	Dec. 1918,	7	5	1354xx
Texas & Pacific	J. E. McCleskey 1,	Jan. 1919,	1200	1100	3427
Texas & Pacific	M. V. Brewer 1,	Jan. 1919,	Gas	150	3248
Texas & Pacific	M. N. Brewer 2,	Jan. 1919,	150	150	3259
Texas & Pacific	J. B. Hands 1,	Jan. 1919,	1000	950	3305
Texas & Pacific	F. H. Layne 1,	Jan. 1919,	100	50	3510x
Prairie O. & G. Co.	D. A. Hestilow 1,	Jan. 1919,	200	300	3440
Prairie O. & G.	Hayden 2,	Jan. 1919,	1500	1100	3490
Prairie O. & G.	T. J. Earnest 2,	Jan. 1919,	600	600	3305
Prairie O. & G.	T. W. Duncan 1,	Jan. 1919,	265	265	3413
Prairie O. & G.	Duncan et al 1,	Jan. 1919,	1000	800	3364
Magnolia	W. E. Rock 2,	Jan. 1919,	1500	1000	3560
Magnolia	T. J. Nash 1,	Jan. 1919,	1500	1300	3516
Magnolia	T. J. Nash 2,	Jan. 1919,	1500	1200	362
Magnolia	T. W. Connellee 1,	Jan. 1919,	4920	3200	3420
Gulf Prod. Co.	F. W. Taylor 2,	Jan. 1919,	1400	1300	3465
Gulf Prod. Co.	F. W. Taylor 3,	Jan. 1919,	1500	1390	3485
Gulf Prod. Co.	State-Collett 2,	Jan. 1919,	1000	800	3460
Gulf Prod. Co.	J. B. Blick 1,	Jan. 1919,	50	50	3500
Humble O. & R. and Republic Prod. Co.	J. W. Jones 3,	Jan. 1919,	30	30	3487
Texas Co.	M. H. Hageman 1,	Jan. 1919,	100	100	3320
Texas Co.	A. L. Duffer 4,	Jan. 1919,	600	400	3485
Texas Co.	H. L. Duffer 5,	Jan. 1919,	400	350	3478
Sun Co.	Rust 1,	Jan. 1919,	900	500	3448
McManus et al	J. S. McDowell 1,	Jan. 1919,	100	900	3192
J. H. Markham, Jr., and System (Tidal) O. Co.	S. F. Coleland 2,	Jan. 1919,	600	150	3488
Gladstone O. & R.	Barton 2,	Jan. 1919	1500	900	3527x
Hivick & Mohler	T. & P. fee 1,	Jan. 1919,	10	....	3650
J. L. Hamon et al	D. McCleskey 3,	Jan. 1919,	1200	700	3422
States O. Corp.	Parrack 1,	Jan. 1919,	200	....	3710
Texas & Pacific	D. E. McCleskey 1,	Feb. 1919,	800	800	3458
Texas & Pacific	J. H. McCleskey 2,	Feb. 1919,	50	50	3427
Texas & Pacific	J. H. McCleskey 3,	Feb. 1919,	50	50	3435x
Texas & Pacific	J. H. McCleskey 1,	Feb. 1919,	100	100	3165
Plains O. & G.	Haynes 1,	Feb. 1919	90	90	3280x
Texas Co.	A. L. Duffer 5,	Feb. 1919,	400	350	3478

x—Signifies shot.

xx—Denotes Pumping.

x-xxSignifies Shot and Pumping.

Other wells listed are flowing.

Kay County, Okla., Produces Two Good Wells During Week's Operations

Staff Special

TULSA, March 1.—Further development in northern Kay county, close to the Kansas line, brought two good producing wells during the week. The best of these is the No. 1 Fester of McCaskey & Wentz in the northwest quarter of the southwest quarter of Sect. 17-28-1E. This well, which is not yet completed, is making 150 barrels a day from the sand found at 1,725 to 1,735 feet.

It is in the same section as the McCaskey & Wentz well brought in about two weeks ago as a 290-barrel producer in the 1,980-foot sand. Just to the north of the new McCaskey & Wentz well, the National Refining Company has a 125-barrel producer on its No. 14 Union, in the northwest quarter of Sect. 28-28-1E. This is producing from 1,990 feet, the same sand as that found in the original McCaskey & Wentz well.

In the Osage, the Gypsy Oil Company has an 850-barrel well in the southwest quarter of the southeast quarter of the southeast quarter of Sect. 18-27-8 in the sand found at around 2,400 feet. This well is three locations west of the Gypsy No. 3 well in the southwest quarter of the same section which drilled into a 10,000,000-foot flow of gas on February 27, the gas catching fire and badly burning two men. It is believed that the gas took fire from the boiler of the drilling engine.

In Sect. 36-25-9E, southwest of Nelagoney, the Indian Territory Illuminating Company has a 200-barrel well at its No. 2 in a sand found at from 2,030 to 2,075 feet. Southeast of Pawhuska, in Sect. 14-25-11E, Sheppard and others have a 70-barrel well in their No. 1 test in the 1,770-foot sand. In Sect. 20, same township and range, the Manhattan Oil Company's No. 51 is making 65 barrels from the same sand after a shot.

In Sect. 31, same township and range, the Barnsdall Oil Company's No. 7 is good for 50 barrels after a shot. This is producing from a 1,575-foot pay, nearly 200 feet above the level of the horizons reached in the other wells in the same neighborhood. In Sect. 31 the Sinclair has a 15-barrel well on its No. 9 in the 1,700-foot sand, after plugging back from 2,150 feet.

Just west of Bigheart, the Osage Development Company has a 125-barrel producer in the Bartlesville sand on its No. 1 test in the northwest quarter of Sect. 19-24-10E. In Sect. 32-23-11E the Titus Oil Company on its No. 1 test has a well flowing 85 barrels a day from 1,810 feet. The well has been shut down for tankage.

Good For 500 Barrels

The best well brought in in Okmulgee county during the week was the No. 6 Sewell of the Producers' & Refiners' Corporation, in the southwestern part of the county in Sect. 2-13-11E. This well is estimated good for 500 barrels from the 2,440-foot sand.

The Devonian Oil Company and Elliott has a 6,000,000-foot flow of gas from its No. 1 test in the northwest quarter of Sect. 20-20-12E on top of the Bartlesville sand at 1,400 feet, close to Hurley. The Selby Oil Company has a 50-barrel well in the Bartlesville sand in Sect. 4-27-10E, northeast of Pawhuska.

Just west of Quay, the Cosden Oil & Gas Company have two good wells in Sect. 36-20-5E. These are their No. 17 on the school land tract in the southwest quarter of the southwest quarter, flowing 80 barrels from the 3,140-foot sand, and the No. 20 on the same tract which is making 100 barrels from the same sand.

In the Garber pool, at its No. 7 Schroeder in Sect. 18-22-3W, the Roxana Petroleum Company has 10,000,000 feet of gas at 1,450 feet. In the Cement pool, the Calla Belle Oil Company has a hole full of oil at 2,385 feet on its No. 1 test in the center of the southwest quarter of the southeast quarter of Sect. 2-5-9W.

The Magnolia Petroleum Company has a hole full of oil at 3,550 feet in its No. 1 Hollis in the southwest quarter of the northeast quarter of the southwest quarter of Sect. 19-19-6E, and in Sect. 9-19-13E J. E. Crosbie has a well good for 20 barrels after a shot in its No. 4 Bell.

Near Pemeta, in the Cushing field, the Creek County Gas Company has a well making 30 barrels natural from a 2,935-foot sand in its No. 1. Ellis in Sect. 2-18-5E. Near Oneta, in Wagoner county, the Cosden Oil & Gas Company's No. 1 Louis Bates test is dry and abandoned at 1,300 feet, while in Sect. 7, same township and range, Bearman and others have a well estimated good for 50 barrels after a shot in the sand from 1,260 to 1,280. This well is their No. 9 F. Presley.

Gypsy No. 1 Dry

The Gypsy's No. 1 Baysinger, in the southeast corner of the northwest quarter of Sect. 24-17-13E, southeast of Sapulpa, in the Glenn pool, is dry and abandoned at 1,550 feet. The Prairie Oil & Gas Company has a 50-barrel well from the 2,700-foot sand on its No. 2 Roberts, Sect. 8-16-9E, near Britsow.

South of Sapulpa, in the Glenn pool, H. D. Stein has a 25-barrel well on his No. 5 Ware in the southeast quarter of the northeast quarter of Sect. 36-16-11E. In Okmulgee county, northeast of Okmulgee, the Hanson Oil Company has a well estimated good for 75 barrels from a sand found at from 1,280 to 1,375 feet, on its No. 8 Adams, Sect. 11-15-14E, Northwest of Okmulgee the Black Hawk Oil Company has a flow of gas estimated at 15,000,000 feet from the 2,290-foot sand, after the well had been plugged back from 300 feet.

Close to Okmulgee, in Sect. 32-13-13E, Waite Phillips found the sand at 2,020 feet in his No. 4 Bowman and has a well estimated good for 15 barrels. In Sect. 9-11-14E, the Okmulgee Producing & Refining Company has 5,000,000 feet of gas on its No. 5 Daniels, in the 1,400-foot sand.

In southern Oklahoma the Gypsy Oil Company has a well making 35 barrels natural in Sect. 32-2-3W on its No. 3 Moncrief. This well is in southwestern Garvin county, near Foster. There were no other wells brought in in the extreme southern part of the state and there were a half dozen abandonments of widely scattered wildcat tests in the southern counties.

Tests Go Ahead At Burkburnett, Where Production Starts Decline

Staff Special

BURKBURNETT, TEXAS, March 2.—When the Burkburnett field a week ago showed a falling off in daily production of approximately 500 barrels to 53,520 barrels daily, operators who had been watching for the overdue decline in the intensive townsite development area pointed out that the turning point was at hand. The explanation made at that time that a number of wells had been shut down while being rigged up to pump only served to corroborate the contention that this highly flush district was beginning to adjust itself to the inevitable, the condition existing in the face of new completions totaling some 2,000 to 3,000 barrels, initial.

That the conclusion was correct and that the turning of the tide had begun was made certain this week, when the daily average production of the Burkburnett pool had declined further to 49,185 barrels in the face of 3,500 barrels initial production from newly completed wells, making an apparent falling off that would total approximately 7,700 barrels in the seven days.

The high tide of Burkburnett production had been reached two weeks ago, but it was not until last week that the northern or Wichita Falls district, of which it is a part, had at any time recently fallen below the daily average of Ranger and contiguous territory, which is going slowly but steadily forward.

As the downturn comes at Burkburnett a certain significance presents itself because of the peculiar conditions existing in the townsite development area. As has been often pointed out, the intensive drilling campaign that found derricks as close together as they might be placed on town lots was responsible for the veritable flood of oil that has been coming from this pool in the eight months since the "townsite discovery" well was drilled last July.

It was inconceivable to the oil operator who had followed campaigns down thru scores of other development areas in Pennsylvania, Ohio, Kansas, Oklahoma, etc., that such active drilling as was being pushed ahead at Burkburnett could continue as long as it did and the new production come quickly enough to keep daily averages climbing from week to week in the face of the natural, or nominal, decline that is a factor in all field operations. These operators were surprised two months ago that the turn in the tide had not materialized, but when all records continued to be broken for three, four, five, six weeks, they began to wonder. Now, they are seeing the expected in the course of the happening.

There is no discounting the fact that Burkburnett may still produce what the oil operator can only vaguely call "a lot of oil." That it has been, and still is, a truly wonderful pool none will gainsay. Were this not a fact, it would have been impossible for a 1,700-foot shallow pay

to have held up, and kept its averages going ahead the way that the townsite pool has done.

As against 21 completions credited to the pool in the week just ended, there are upwards of 65 tests in some stage of the drilling operation, and some 25 others in which casing has been set getting ready to drill in. Other locations have been made or drilling sites purchased by persons with speculative interests until it is uncertain just how much development may result in the future. Certain it is, however, that the faster the townsite is drilled up the smaller the initial production of the well is bound to be, and, consequently, the shorter the life of the wells is to become.

The Eagle Oil Company's No. 1 Hardin is the latest test to be definitely abandoned in the district. The McGraw Oil Company test, north of the Clint Wood well, on the northwest edge of the pool, also is a failure. Interest continues to be manifested in the Burk-Ridge test across the river in Cotton county, Okla., which is on top of a sand found below 1,600 feet, and in which casing has been set. Until the casing sets, however, it is problematical whether the sand is productive, as the test cannot be drilled in until that time.

Kansas Field Best Is 125 Barrel Producer

Staff Special

TULSA, March 3.—The best well brought in in Kansas during the week was a 125-barrel producer of the Empire Gas & Fuel Company on its No. 24 Carden, in the southwest quarter of the southeast quarter of Sect. 11-26-4 E, Butler county. This well found the pay at around 2,350 feet.

Snowden Brothers have a hole full of oil from the 2,700 foot sand in their No. 3 Joseph test, in the northwest quarter of the southeast quarter of Sect. 25-24-3 E. The Wizard Oil Company has a well estimated at 40 barrels on its No. 2 Bush in the 2,700 foot sand. This is in the Augusta field.

The Brothers Oil Company has a 5-barrel well after a shot on their No. 1 Erickson in the northwest corner of the southwest quarter of Sect. 2-27-16 E, and a well estimated at 10 barrels on their No. 2 Erickson in the same section. Both wells are producing from the sand found at from 975 to 1,010 feet.

The Buffalo Oil Company has a well estimated at 7 barrels after a shot in the 1,000 foot sand on its No. 2 Carlson. No. 1 Carlson is dry and abandoned at 1,000 feet. Carlson's No. 3 Holem in the southeast quarter of the northeast quarter of Sect. 24-26-5 E, looks like a dry hole in the 2,700 foot sand. A shot failed to do any good and the well is now shut down.

Fred Trute has two small gas wells and two dry holes east of Chanute in Neosho county. His No. 1 Smith is flowing 500,000 feet of gas from 850 feet, and No. 2 Smith 250,000 feet from the same sand.

TULSA, March 2.—Two men were burned, one of them probably fatally, when the Gypsy's Skelly well in the Osage, in Sect. 17-27-8, came in, flowing 10,000,000 feet of gas, on the night of February 27th. The gas caught fire, presumably from the drilling boiler.

Under His Direction Gulf Holds Attractive Ranger Acreage

Staff Special

FORT WORTH, March 1

The active part taken by the Gulf Production Company in the development of north and west Texas acreage has served to call attention to the work of Walter B. Pyron, third vice-president in charge of operations out of Fort Worth, where headquarters are maintained. Mr. Pyron is only 37 years old and has risen to the executive position he occupies from a book-keeping job in the Beaumont office in a period of only twelve years. Previously he had "roughnecked" on a rig of the old Guffey Petroleum Company in the early days of Gulf Coastal development, starting in 1905 with this corporation, which was the foundation for the Gulf organization in Texas.

The Gulf Production Company is the Texas operating subsidiary of the Gulf Oil Corporation interests, in which the Mellon crowd of Pittsburgh bankers is predominant. It was decided early last year, when the first general activity became apparent at Ranger, to enter actively into development in this area. As a result, a new division was created and Mr. Pyron, then third vice-president of the Gulf Refining Company of Louisiana, at Shreveport, was transferred to Fort Worth.

Corporation's Faith Justified

How the faith of this corporation in the Ranger territory was justified is shown by the development of profitable leases both in Eastland and Stephens counties, where hundreds of acres were blocked up at a time when bonuses were more reasonable than they now are and when it was possible to obtain tracts within reasonable boundaries without an almost microscopic search such as now becomes necessary in either of the two counties.

The Gulf Pipeline Company's newly completed 8-inch line from the Ranger district to Fort Worth, where a refinery is maintained, is about to be hooked up to this affiliated corporation's wells and an outlet thru its own channels is at the point of being provided for the Gulf's production. It is true that comparatively little of the Gulf Production Company's acreage in the Ranger district has been drilled up, but this has been due largely to the physical conditions that held back operations of most of the major companies last summer and winter—drouth conditions at first and the winter mud in the second place.

Walter B. Pyron

Taylor Lease Gives Promise

One lease of the Gulf at Ranger is giving particular promise, and for the present is showing for its best production in that territory west of the townsite where the Magnolia Petroleum Company's Connellee, the Prairie Oil and Gas Company's Roper and Emma Terrell, and the John H. Markham, Jr., System Oil Company's Copeland wells came in. This lease is on the Taylor tract. The fact that only two or three wells have been completed, however, has failed to make apparent whether this or some other lease at Ranger is going to be the tract of the Gulf in this development area that will take comparative rank with the Ferry Lake development in the Caddo field of Louisiana, the Gypsy Oil Company's Shumway at Towanda, Kan., and the old Boston pool of the Gypsy (the Oklahoma operating subsidiary of the Gulf Oil Corporation).

It has been significant that in each development area where the Gulf has been active, some one lease has almost invariably taken front rank for its production and it was at the time that Mr. Pyron was business agent of the Gulf Refining Company at Shreveport that this operating subsidiary turned the "old frog pond" at Ferry Lake into the most profitable lease ever developed within that state, having obtained the rights thereto from the Caddo Levee Board when other interests scoffed at the idea that it might be productive.

Mr. Pyron took the Ferry Lake lease only a short time after he had been sent to Shreveport in 1909, his position as business agent dating from that time (only two years after he had entered the Beaumont office as a bookkeeper) until his election a few years ago to a vice-presidency.

Active In Public Affairs

Mr. Pyron, who had served in official capacities with the Shreveport Chamber of Commerce, had been active in Rotary Club work and had been the ranking officer in Louisiana of the Knights of Templar, continues to take an active part in civic and fraternal affairs at Fort Worth. He is an officer of the Chamber of Commerce and took an active part in the work of its committee recently when it appeared before the legislature at Austin regarding taxation questions.

Mr. Pyron's first assistant, J. Alvin Gardner, who he brought with him from Shreveport to Fort Worth, was only recently transferred to the management of the production office at Wichita Falls, where he will have charge of Burkburnett and other developments in the northern district, another of Mr. Pyron's aides at Shreveport, F. J. Adams, succeeding to the vacancy thus created. Mr. Pyron also is ably assisted in this division by H. A. Melat, superintendent of production, with whom he worked at Shreveport, both of these men bringing to Texas a large part of their staffs who were with them in Louisiana development.

Another Mexican Oil Company Building Sea-Loading Plant

By Special Correspondent

TAMPICO, MEXICO, Feb. 25. — The Transcontinental Petroleum Company is the latest of the big operating companies of Mexico to announce plans for an extensive construction plan. It has secured a site in the lower fields for a sea-loading terminal and has sent its engineers down to lay out the grounds. The site of the new plant is just below the Agua Dulce terminal of the Texas Company, opposite the town of Chonera, at the lower end of the Tamiahua lagoon.

A two-berth sea-loading terminal will be erected, complete in all respects. A 10-inch pipe line from the company's two producing wells in the Amatlan district will be laid. Three pumping stations are provided for, one being at the wells; another midway between the wells and the terminal, and the third will be situated at the latter point.

Storage capacity for 500,000 barrels of petroleum will be constructed at the terminal, as an initial installation, with the plan for adding to it as occasion demands. A modern wharf is to be built at Cuecillos, or opposite Chorera, and either a steam railway or a first-class automobile road will be constructed from the wharf to the terminal.

The original plan provided for a 10-inch trunk line with 8-inch laterals, but this plan was changed and all pipe lines will be of 10-inch capacity.

All arrangements have been completed for commencing the work, including the types of boilers, pumps, etc., to be used in the plant, and the surveyors are on the ground marking out the locations of the various buildings, getting right of way for pipe line and railroad.

The two wells that the International has completed have developed a potential capacity of 100,000 barrels a day, so that with future wells the company plans to drill it will have ample production.

On the terminal site there is space for a refinery and topping plant, which will be considered later.

Most of the important work, at present, is being done in the lower country. La Atlantica's terminal at Port Atlantica is progressing favorably and is beginning to take on the appearance of a sea-loading station. Seven 55,000 barrel steel storage tanks are being erected, and the foundations are about finished. All the fire walls are done and the foundations for the boiler house, machine shops, pump house, and other buildings, are well under way. The employes' dwelling houses are completed and are occupied by the men working there. The ground for the refinery is graded and the warehouse, commissary, and other company buildings will be completed as rapidly as material arrives, so that when the heavy material arrives there will be sufficient storage capacity for it.

The Cia. Terminal Union, S. A., is the name of a new incorporation with American capital, to engage in business in the Mexican fields. This company has purchased the entire production of the Hispano-Mexicano and Tex-Mex Fuel Oil Company and already has shipped two cargoes of 40,000 barrels each, to the Cuban-American Sugar Company, at Puerto Padre, Cuba. It has closed contracts with this latter company, and others in the United States, that will insure its being a regular shipper hereafter.

M. N. Bensabat, of New York and Cuba, is the president of the company, the other officers being from Tampico.

The Mexican Gulf Company is preparing to lay an additional pipe line paralleling its present line from Tampico to Tepetate, which will increase its capacity by 10,000 barrels.

Additional pumping units have been ordered for its Tepetate and Horconcitos stations. Two 37,000 barrel steel storage tanks will be erected at Tepetate and two additional 55,000 tanks at its Prieto terminal.

Tankers Released

The release of tankers by the United States War Board is helping the Mexican trade, as a number of vessels that have been strangers here for the last year or so have appeared again in the port. The Mexican Gulf's tanker, Trinidadian, arrived this week, and two more, the Guffey and Winnifred, are expected shortly. The Gulf now has three tankers making regular trips, the Trinidadian Larimer, and Ligonier, besides four barges and two tugs. The East Coast Oil Company's big tanker, Topila, is back again after a year or so spent in the service of the War Board.

The Huasteca Petroleum Company has received several additions to its big fleet, and the same is true of the Standard and other shipping companies. The exports from Mexico will show a big increase this year over its 64,000,000 barrels of 1918.

The Freeport & Mexican Fuel Oil Corporation is laying the foundations for two additional 55,000 barrel steel storage tanks. The tanks have arrived at New Orleans and will be brought over on the next steamer.

Due to bad weather which makes the swampy, seacoast roads impassable, to the lack of issuance of drilling permits, and other causes, of which these are the principal, work in the fields is at a low stage, and what there is under way is merely of a routine character. Some of the principal companies are unable to do anything and none are working up to what they would be doing if conditions were different.

Portrero No. 7, of the Mexican Eagle Company (Aguila) is waiting for the cement to set.

Los Naranjos, No. 11, on lot 10, and Los Naranjos No. 10, on lot 112, belonging to the same company, are both at the same depth, 3,451 feet.

Los Naranjos No. 8, on lot 260, is ready to resume drilling at 1,690 feet.

Pablo No. 1, on lot 135, of the Transcontinental Petroleum Company, is down 2,142 feet in green shale.

Barberena No. 5, of the same company, is in lime rock at 1,911 feet.

Isleta No. 1, on lot 21, of the Mexican Gulf Company, is fishing at 2,405 feet.

Cuecillos No. 1, on lot 2, San Sebastian district, belonging to the Cia. Petrolera y Agricola Mexicana, San Jose, is at 2,540 feet.

Tamantao No. 1, on lot 8, Cosden & Wilson, has reached a depth of 2,000 feet.

Quebrachita No. 1, on lot 8, Cosden & Wilson, is in shale at 2,050 feet.

Ovananos No. 1, on lot 10, of the Mexican Producing & Refining Company, is rigging up.

Well No. 1, Tampuche district, of the Kern-Mex Oilfields, is ready to spud in.

Tamboyoche No. 4, on the Harrison property, belonging to the Cia. Mexicana de Combustibles, the production department of the Pierce Oil Company, is all ready to drill as soon as it receives a permit.

Tamboyoche No. 5, on lot 7, same company, is rigging up.

Santa Fe No. 4, same company, is building rig.

The Freeport & Mexican Fuel Oil Corporation is preparing to resume drilling on its Gutierrez No. 4, on which drilling has been suspended since 1916. The hole was down 1,750 feet when work was stopped.

Comales No. 1, of the Island Oil & Transport Company, has not finished changing from rotary to standard tools, on account of the bad weather delaying the arrival of material.

Harrigan No. 2, of the Tampascos Company, is shut down at 2,111 feet to straighten a drill stem.

Robles No. 3, on the Robles lease, same company, is rigging up.

Empire Launches New Drilling Campaign

Staff Special

BARTLESVILLE, OKLA., March 1. —The Empire interests are launching at once a development campaign in Comanche county, Texas, according to an announcement given out here. The Empire, it is announced, has more than 20,000 acres under lease in Comanche county alone and has large blocks of acreage in Eastland, Shackleford, Stephens, Coleman, Brown and Palo Pinto counties.

It is understood that six strings of tools are to be started immediately and while the exact locations are not given out it is known that the Empire has large holdings very near the Magnolia Petroleum Company's big well on the Duke farm and it is believed that development will begin in this territory.

F. R. Cooley, assistant superintendent of development, is on the ground with headquarters at Gorman, supervising the getting in materials needed for the beginning of operations.

Staff Special

FORT WORTH, March 1.—Permission to carry on business in Texas has been granted the Pennsylvania Producing Company, of Oklahoma City. The Texas headquarters will be in Fort Worth in charge of J. P. Evans, formerly of Shreveport, who of late has been active in "wildcat" development in southwestern Oklahoma, including Cotton county.

FORT WORTH, March 4.—A bill is before Governor Hobby for signature permitting re-entry of corporations under disability to operate in Texas, following passage by both houses of legislature.

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High Prices Asked For Acreage In New Claiborne District

By Special Correspondent

SHREVEPORT, LA., Feb. 28.—It is estimated that upwards of $750,000 has already changed hands in the leasing campaign now in progress in the new Claiborne oil field, lying about forty miles east and a little north of Shreveport. Only one producing well has been completed in the new territory, and it is a very unusual occurrence to see so much money invested without waiting for more certain proof of getting definite results from the investment, but there seems to be no limit to the faith that is being placed in the future of this territory.

Expert geological opinion is largely responsible for the confidence that is being placed in the Claiborne pool, the history of which clearly demonstrates the recent strides that have been made by this branch of the oil industry. Every company of any importance has had its geologist in the field since its inception, and it is largely to their advice and recommendation that they have gone in so heavily.

The possible extent of the new field, in the minds of operators, seems to be almost without limit. Thousands of acres of land have been leased in Claiborne, Webster and Bienville parishes, and derricks are going up for tests which will cover the entire territory. At the present time, the roads are in an almost impassable condition, but in spite of all obstacles, four derricks have gone up and others are being built as rapidly as timbers can be hauled to the locations.

A number of good wells were completed during the week in the Pine Island district, among them a 1,200-barrel well by the Caddo Oil & Refining Company in No. 1 Noel, Sect. 25-21-15. The Louisiana Oil Refining Corporation completed a 300-barrel pumper in Lane A-7, Sect. 30-21-14, and the Banks Oil Company completed No. 2 Clark in Sect. 14-21-15, pumping 200 barrels. The Ranger-Pine Island Oil & Refining Company completed a 125-barrel pumper in No. 1 Hutchinson, Sect. 3-20-15.

In Hosston District

In the Hosston district, the La Caddo Producers' Company completed a 20-barrel pumper in No. 6 Jolly, Sect. 21-22-15, in the shallow sand territory, and in the old Mooringsport district the Gulf Refining Company completed a 30-barrel flowing well in No. 168 Ferry Lake, Sect. 24-20-16.

In the Claiborne field, Bill Rowe et al have started drilling No. 1 Shaw in Sect. 30-21-7; Baird et al have derrick up for No. 1 Robinson in Sect. 28-22-8, five miles northwest of the discovery well; the Arkansas Natural Gas Company has made a location for No. 83 Shaw in Sect. 30-21-7; the Ben Anguish Oil & Mineral Company has made a location for No. 1 Harris in Sect. 14-20-8, four miles south and a little west of the discovery well; J. M. Parker is rigging up to drill No. 1 Harmon in Sect. 16-21-7, two miles north, and Westheimer et al are rigging up to drill No. 1 White in Sect. 36-21-8, a mile southwest of the discovery well.

A report that oil had been found in the Cotton Valley well, fifteen miles northwest of Homer, caused considerable excitement in oil circles Thursday, but was found to be without foundation. This test is being drilled by the Pine Valley Oil & Development Company on the Gleason lease in Sect. 31-22-9, in Webster parish, and the entire territory between here and Homer has been leased for prospective drilling operations. An interesting test is being made in Bienville parish, on the east shore of Lake Bisteneau, by the Arkansas Natural Gas Company, on the Carter lease in Sect. 13-16-10, in which they are preparing to drill in to the sand.

An extensive territory in the Bull Bayou district is now being explored for oil and drilling operations are in progress which cover an area of fully twenty-five square miles. The Gulf Refining Company has one well drilling on the Jenkins lease in Sect. 14-12-11, and two drilling and one location on the Wemple lease in Sect. 23-12-11; Keen & Woolf are drilling No. 1 King in Sect. 26-12-11; the Dixie Oil Company has a fishing job in No. 1 Harp, Sect. 36-12-11; and other wells drilling are the Bull Bayou Oil Company's No. 1 Carter in Sect. 13-12-11; the Arkansas Natural Gas Company's No. 82 Hollingsworth in Sect. 19-12-10; the Depositors' Oil & Gas Company's No. 1 Polley in Sect. 7-12-10; Hickman & Kyle's No. 1 Hollingsworth in Sect. 24-12-11, and the Fortuna Oil Company's No. 1 Chaffraix in Sect. 26-12-11.

Other Operations

The Federal Petroleum Company is down about 1,500 feet in its second test on the Union Sawmill Company lease in Sect. 17-20-3, in Union parish, trying to cut off a flow of fresh water, and are building derrick for a third well in Sect. 3-20-3.

In Lincoln parish, the Amber Oil Company is drilling to the deep sand in No. 1 Newblock, Sect. 22-18-2.

Sabine parish operations are again arousing considerable interest; the Sinclair-Gulf Company is drilling on the Long Leaf Lumber Company lease in Sect. 25-6-11, and Woodley and others have organized as the Crescent Oil Company and have started drilling on the Davis lease in Sect. 28-7-10.

Special interest is being taken in operations in the Pine Island district, which border on the edge of the pool and stand some chance of getting light oil. In the extreme south end of the district, the Hudson Oil Company is down over 1,000 feet in No. 1 Self in Sect. 11-20-15, and a mile west of here the Allied Oil Company has made a location on the Hughes lease, owned by the Democratic Oil Company, in Sect. 15-20-15. Derrick is up and a deep test will be made for light oil.

In the north end of the district, between the Pine Island and Hosston districts, the Eureka-St. Louis Oil Company has started a test on the Waters lease in Sect. 29-22-14, which will be watched with interest as a possible extension of either territory. The Greer Oil Company has started drilling No. 23 Jolly in Sect. 22-22-15, in the Hosston district.

The Prudential Oil & Refining Company is making a chalk rock test in No. 3 Noel, Sect. 7-21-14.

The Over The Top Oil Company had a big gas blowout in the shallow sand in No. 1 Hicks, Sect. 2-20-15, throwing mud and sand over the top of the derrick, but the well will be drilled deeper.

Other wells drilling in the south end of the field are the Ranger-Pine Island Oil & Refining Company's No. 1 Muslow in Sect. 3-20-15; W. G. Souders' No. 1 Hicks, in Sect. 2-20-15; the Old Pioneers' Oil Company's No. 1 Herold, in Sect. 6-20-14; the Bradford Oil Corporation's No. 1 Hicks, in Sect. 2-20-15, and Jones et al's No. 1 Campbell in Sec. 2-20-15.

The Great Southern Producing & Refining Company, which contemplates the building of a refinery in this territory, has derrick up for a well on the Ellerbe lease in Sect. 9-20-15; the Humble Oil Company has one well drilling on the Noel lease, and is rigging up to drill another in Sect. 19-21-14.

The Globe Oil Company is going ahead with extensive drilling operations on its recently acquired properties in the Pine Island and Mooringsport districts.

Bill Grants Eminent Domain To Lines

Staff Special

FORT WORTH, March 1.—After substituting the Senate bill for its own, the lower house of the Texas legislature passed to engrossment a measure adopted in the higher body of the assembly giving oil pipe lines the right of eminent domain. A feature that would have required pipe lines to at all times have transportation channels of sufficient size to carry all crude offered them was eliminated.

Present laws require pipe line companies to pro-rate their carrying capacity among all producers in an oil field when unable to carry the entire production. Until now pipe line companies have found their projects at times held up by a single land-owner, or a limited number of land-owners, standing in the way or demanding exorbitant recompense, which situation is taken care of in the bill granting eminent domain.

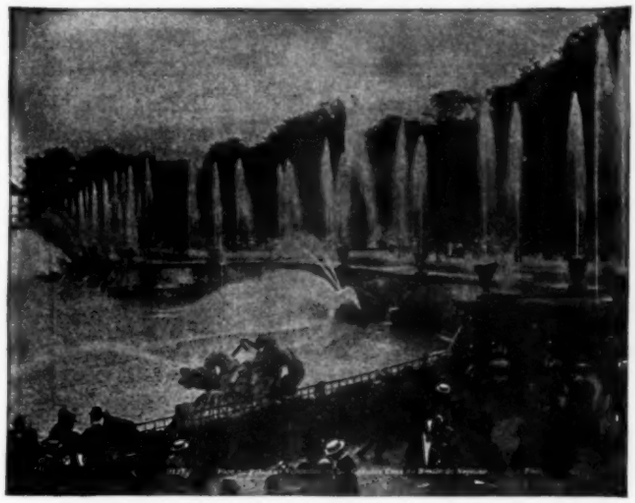
Raises Drill Question

Staff Special

RANGER, TEXAS, March 1.—The recent incorporation of the town of Ranger, in the center of the oil fields of the same name, has put up to the city council the question of town lot drilling, which for the present remains undecided. Prior to incorporation a number of test wells were put down with more or less indifferent results in what now is covered by the corporate limits.

Whether additional town lot drilling will be permitted is the question to be decided. The depth at which the pay is reached in the Ranger district, 3,200 to 3,500 feet, of course, precludes any such intensive campaign as resulted in the 1700-foot sand area at Burkburnett, in the so-called northern district of Texas development.

Cast Iron Pipe



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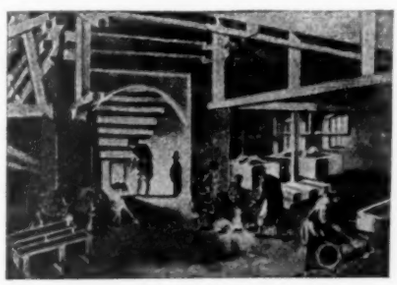

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The most important of these conduits comprise five lines of 20" pipe, each about two miles long; two lines of 20", each about a mile and a half long; and two lines of 13 1-2", each about one mile long.

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Royalty Units Sold In Texas Acreage

Staff Special

FORT WORTH, March 2.—Royalty units, which came into being early in the history of the Towanda pool of Butler County, Kan., have invaded the north Texas districts and are now being offered to the public in at least one instance, the originators of the idea having transferred their operations, in part at least, from Wichita, Kan., to Dallas, Texas.

The buying of royalties, and the subdivision thereof among a limited number of persons, has obtained previously in Texas, just as it has done down thru the years of the oil industry. It was not, however, until the Towanda pool of Kansas first came into prominence that the unit system was originated, whereby a trusteeship was created and the investors in royalty units bought them on the market after the fashion of stocks. Likewise until now this practice has not been a part of investments incident to north and west Texas development.

It will be remembered that Stanley Brothers of Wichita obtained one-half of the royalty in the famous Shumway lease operated at Towanda by the Gypsy Oil Company, paying $50,000 for the one-sixteenth interest in the whole at a time when the tract gave promise of production. The reader further will remember that afterwards this tract became the banner producing lease of Butler county, Kan., and that this one-sixteenth royalty, which was marketed on a basis of $60,000 capitalization, or a promotion of only $10,000 to the syndicate, paid richly the original investors from the nearly 6,000,000 barrels of crude produced from the lease in the first 12-months period.

That investors who bought royalty units at the high mark, around $1,625 a unit, as compared with the original price of $50, failed to realize on their investment, was, of course, not the fault of the syndicate, but, instead, of the brokers who induced purchases at a time when the phenomenal Shumway lease had reached the peak of production and was ready for the certain decline that always goes ahead more rapidly than the advance of production that precedes it.

It has been stated upon authority of the bankers of the Shumway royalty that in the period from July 16th, 1917, to December 15th, 1918, the 1200 units of original value of $50 each participated in a division of a total of $908,802.74. Knowledge of the productivity of the lease and also of the fact that division of the profits was made thru a Wichita bank as trustee leaves the statement to be taken at its face value. Similarly, the deeded one-sixteenth royalty on the Ralston 80 acres at Towanda, is credited with having paid unit holders $241,113.01 in the twelve months from November 17, 1917, to December, 1918.

What is to result from operations in Texas, of course, the drill must tell. A 983-acre tract in the Burkburnett field has been acquired, it is announced by the syndicate, and 600 out of a total of 1,500 units now are being offered on a basis of $100 a unit. While the advertisements of the syndicate do not say positively whether or not there is production upon the 983 acre tract, the language would indicate there is none; besides it has been the policy previously of these same people to purchase royalty interests in what they consider "the trend of production," allowing under the primary speculative system for great enchantment of value at such time as production may be later found. That was the case with the Shumway, again with other royalties in Butler County, Kansas, and now Texans are having their opportunity of another band of speculation than they had previously known.

The gamble paid out handsomely for the original investor, who bought the Shumway units direct from the syndicate in its Kansas operations; similarly, it lost for the investor who bought from the broker at the peak of speculative prices. The outcome in Texas, so far as this syndicate is concerned, remains to be seen.

Contest For Oil Land In Supreme Court

WASHINGTON, Feb. 28.—What is known as the Elk Hills case, brought against the Southern Pacific Company et al, by the United States in 1910, asking that a patent issued in 1904 to the railroad for 6,109.17 acres of land located in Naval Petroleum Reserve No. 1 in California, be cancelled, has been advanced on the docket because of its general public interest, and the hearing of the questions to be decided on other cases of similar character now pending in California.

The government claimed the patent was issued under a railroad land grant which reserved mineral lands, and the ground of the suit was that, the lands being known to be valuable for oil, the railroad company procured the patent to be issued by false affidavits showing that the land had no mineral value. The government won the original suit in the District Court for the Southern District of California, but the Court of Appeals for the Ninth Circuit reversed the decision, one of the three judges dissenting.

M. K. T. Road Lifts Its Well Supply Embargo

Staff Special

FORT WORTH, March 2.—The Missouri, Kansas & Texas Railway Company has lifted its embargo, effective February 28, against drilling supplies and rig equipment at Gorman, on the Eastland-Comanche county line. A partial lifting of the embargo at Wichita Falls was announced for the northern district a week ago, but the relief did not extend to equipment intended for drilling operations at Burkburnett.

The Texas and Pacific general offices at Dallas are making an effort, it is announced, to relieve the situation on its lines into the Ranger district, but the statement is made that while some cars are moving steadily congestion continues to the extent that cars are backed up across the entire eastern part of the state as far as Texarkana.

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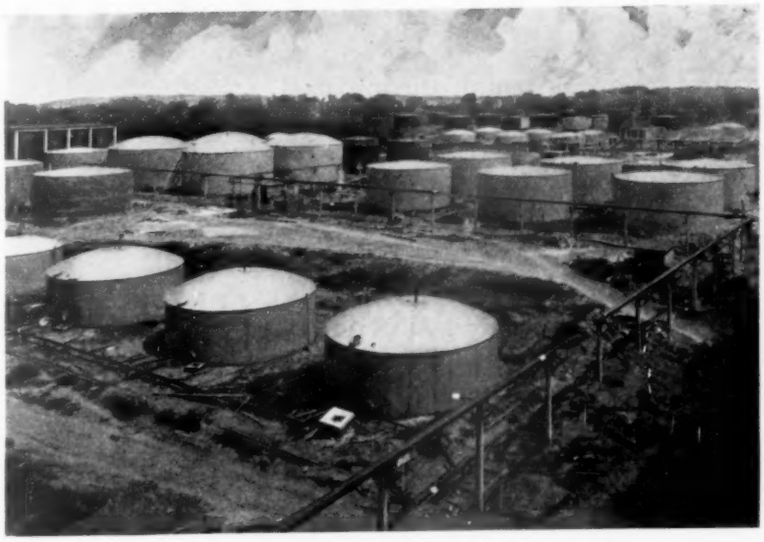

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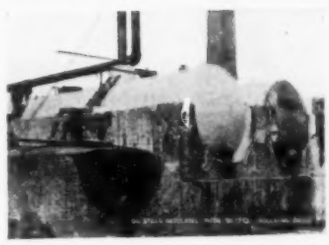

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Recent Activity In Eastern Field Is Holding Up Strong

By Special Correspondent

PITTSBURGH, PA., March 3.—Spirited activity prevailed in the oil fields of the eastern district during the past week, but new strikes are not in keeping with recent weeks in which there were important developments in Liberty district, Marshall county; in Doddridge county, and in the Keener sand in Woodsfield district, Monroe county, Ohio. However, wells previously reported are holding up quite satisfactorily, the Manufacturers' Light & Heat Company's near-gusher in Liberty district still showing around 200 barrels daily as against an original flow of 400 barrels, and the Producers Development Company's well on the Coffman farm, McClelland district, Doddridge county, showing 75 barrels daily when drilled into the second pay in the Gordon sand.

The Manufacturers' Light & Heat Company's feature well is on the Hiermonius farm, and the pay was encountered in the Cow Run sand. The company now presents the best Gordon sand producer struck in Liberty district in months in a 40-barrel well, which was struck on the Robert Buzzard farm. The Manufacturers Company's No. 8 on the Marshall County Bank property is a fair gasser in the Gordon sand. The company also has a fair gasser in the Big Injun sand at a test on the Keon farm in this field.

A 5-barrel pumper in the Blue Creek field, Elk district, Kanawha county, and a 7-barrel well in the Spencer district, Roane county, are the Ohio Fuel Oil Company's contributions to the week's returns.

Drilled thru and shot in the Big Injun sand the Empire Petroleum Company got a 15-barrel producer at its test on the Mullins farm in Porters Creek, Union district, Clay county.

Weir sand completions in the Cabin Creek district, Kanawha county, show a 10-barrel well on the Ramsey farm, Kelly's Creek, for the Columbia Carbon Company, and wells of 45 and 10 barrels, respectively, for the Cabin Creek Development Company on the W. H. Ramsey farm.

The Hope Natural Gas Company completed three Big Injun sand wells on the Gabbert farm in Central district, Doddridge county, and secured 12 barrels daily from one well, 15 barrels from another, and a flow of gas from a third. In the same district, the Imperial Oil & Gas Products Company got a 4,000,000 cubic foot gasser when No. 4 on the Riddle farm was drilled into the Maxon sand. The Wisre Oil Company struck a 25-barrel well on the Marsh farm in Centerville district, Tyler county.

Experimental work has been revived in the lower southwest districts, but other parts of West Virginia show new work of importance. As examples, the Charleston-Dunbar Natural Gas Company has operations on Brown's Creek, Jefferson district, Kanawha county, and also on Hurricane Creek, Curry district, Putnam county; the Kayton Oil & Gas Company has a test under way in Courthouse district, Lewis county; the Carter Oil Company has rig timbers at a location in McClelland district, Dodridge county; the Oil Purpose Company is starting work in Smithfield district, Roane county; the Gibson Oil Company has the drills going in Murphy district, Ritchie county; R. G. Gillespie is active in Ritchie county; the South Penn Oil Company is drilling Nos. 26 and 27 on the Lemon farm

The Southern Oil Company has its fourth well started in Murphy district; the Doman Oil Company has at last started to drill at its location on the Cochran farm in Green district, Wetzel county; the Hope Natural Gas Company has two wells near due in that field, and the same company has the rigs up for four other tests in the district; the South Penn Oil Company is starting Nos. 14 and 15 on the Blackshere farm in Mannington district. Marion county; the Reserve Gas Company, a subsidiary of the Union Natural Gas Corporation, has a test due and a well started in Union district, Harrison county, and it has a well under way in Freeman's Creek district, Lewis county; the Blackshere Oil & Gas Company has started a new hole at a second test on the Watson farm in Mannington district, and the Carnegie Natural Gas Company has two tests in progress in Mannington district.

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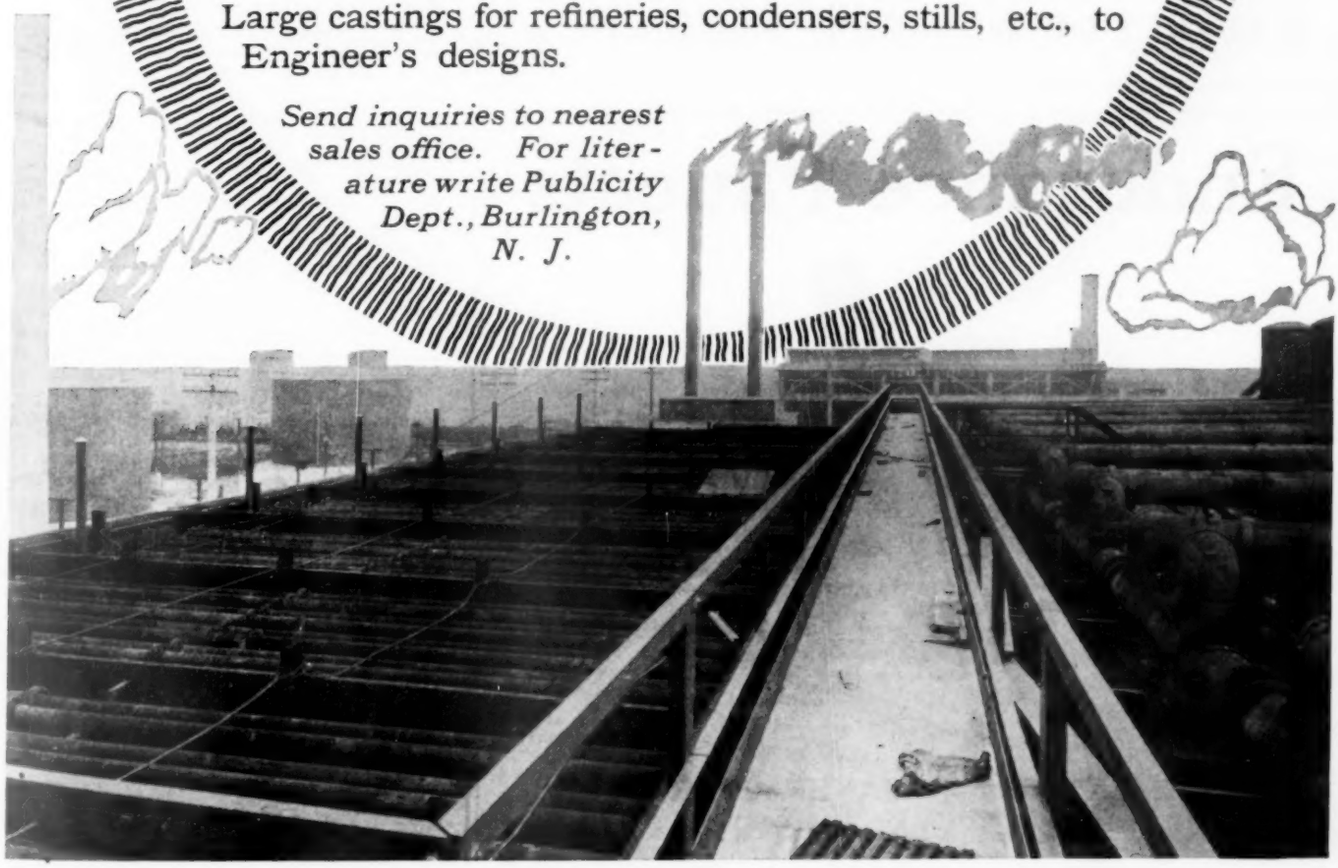

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Kentucky Reaches 150,000 Barrel Goal

By Special Correspondent

LEXINGTON, KY., March 3.—The prediction of President Thomas C. Argue, Jr., of the Kentucky Oil Men's Association, made in his inaugural address in January, to the effect that it would not be long until oil from the Kentucky fields would reach the 150,000-barrel mark, has been fully verified by the reports for the week ending February 22, when the total runs of the Cumberland Pipe Line Company and two independent companies, the Great Northern and the Indian Refining Company, aggregated 156,938.23 barrels.

This delivery is divided as follows: Cumberland Pipe Line, 108,314.65 barrels; Great Northern, 13,907 barrels, and the Indian Refining Company, 34,716.58 barrels. In addition to this phenomenal showing it is estimated that a considerable quantity went out of the state in tank cars, which would easily bring the delivery up to 160,000 barrels.

The biggest well of the week is reported from Warren county by Hillis Brothers, of Lexington, on the Jake Moulder farm. It is estimated at 500 barrels, and is the first well on a 474-acre tract. Warren county is in Western Kentucky, and is contiguous to Allen county, which is being rapidly developed, and where numerous good wells have come in.

Several good wells, ranging from 20 to several hundred barrels, were reported Saturday from the Lee-Estill field.

Old Dominion No. 4, Nannie Bryant farm, Lee county, comes to the front with a production of 500 barrels.

No. 9 of the Duquesne Oil Company, on the Bowles farm, Lee county, is good for 50 barrels.

Hudson & Collins, of Lexington, has two more banner producers in No. 8 on the Fred Slone lease, credited with 100 barrels, and its No. 16 on the Preston Slone farm, rated at 300 barrels. Both are on their Lee county property.

The Colonial Oil & Gas Company did not do as well as was expected with its well No. 4 on the E. G. B. Mann tract, which is in and is estimated at only 20 barrels.

The Day Oil Company's No. 4 on the Comet farm in Estill county is said to be good for 50 barrels.

Mason & Dixon have brought in Nos. 6 and 7 on the Engle farm in Estill county, which are pumping 25 and 35 barrels respectively.

Purchase 12,600 Acres

Winchester and Louisville capitalists, who organized the Southern Security Oil Company at $1,000,000, have closed a deal in Lexington for the purchase of a large acreage of wildcat territory aggregating 12,500 acres in Casey, Adair and Taylor counties, Kentucky, adjacent to the Allen county territory. The consideration paid for the three tracts purchased was not made public.

The Majestic Oil Company reports its No. 8 well on its Ross Creek, Estill county, lease, good for 50 barrels. Wells Nos. 9, 10 and 11 are drilling and expected in this week.

The Bluegrass Oil Company is reported to have sold its holdings of 900 acres in Wolfe county to Brenner & Adams. The consideration is not given.

No. 4 on the Prendergrass farm in Lee county is being pumped, making 15 barrels an hour, as is No. 3. No. 5 is

drilling on the same lease, and a machine is moving to No. 6.

The Bonanza Oil Company has connected up No. 1 on the Prendergrass tract and it is making 50 barrels a day.

White, Newton and Moore have completed Nos. 8 and 9 on the D. W. Braton lease, rated at 9 and 10 barrels respectively. This is in the Fitchburg section of Estill county.

The Lincoln Oil & Gas Company has completed No. 9 on the Millie Freeman lease in Estill county, which is reported good for 80 barrels. Nos. 10 and 11 are being drilled on the same lease.

The Ohio Oil Company shot No. 22 on the Flahaven tract, Lee county, which is reported a good well. No. 29, also on this tract, is just finished and rated at 80 barrels.

The Cumberland Petroleum Company has completed Nos. 8 and 9 on the Sparks lease in Lee county, getting 200 barrels per day. A nice well, amount of production not known, has been brought in by the same company on the Breck Combs farm, Lee county.

The Regina Oil Company has let a contract to test its 216-acre McGuire lease in southwest Lee county. Tests in the same vicinity have showed oil in light volume.

Light producers were brought in on the Henry Shoemaker farm, Lee county, by the Atlantic Oil Producing Company.

Considerable activity is being manifested in the Holly Creek section of Wolfe county, where some good gassers have been found, and where there are strong indications of an oil pool. West Virginia parties are preparing to sink test wells. So far, oil in paying quantities has not been found in that section, but fair gas wells have been found.

The Himyar Oil Company, of Lexington, has brought in a 50-barrel well in Warren county, on the Williams farm, and has started drilling No. 3 about 800 feet from the one just completed.

Tests at Mt. Sterling

Much interest is being shown in a test well sunk on the farm of M. P. Apperson, on the edge of the town of Mt. Sterling, Montgomery county, in the bluegrass region. The oil is reported to have risen 200 feet but the well has not been thoroly tested. Several other wells will be sunk there. The McCombs Producing & Refining Company and the Local Oil & Gas Company have brought in Nos. 9 and 10 on the Rena Butcher tract, in Lee county, rated at 350 barrels each.

On the Mollie Lyons tract, Lee county, the Southwestern Petroleum Company has brought in No. 2, rated at 25 barrels. The Russell Oil Company brought in No. 1 on the Hall & Burke farm, good for 20 barrels; the Petroleum Exploration Company brought in No. 113 on the Wells land, Lee county, rated at 50 barrels; the Swiss Oil Company, operating on the Simpson Crabtree farm in Lee county, has completed three wells, Nos. 4, 5 and 6, rated at 40, 50 and 60 barrels respectively

In Menifee and Powell counties, Hiram Blow, of Nashville, Tenn., has bought four thousand acres from the Brodhead-Garrett Lumber Company, for a private price, and will test it out at once.

Near Fitchburg, Estill county, the Ohio Oil Company has a 10-barreler on the William Adams farm.

The Olympia Oil & Gas Company reports a dry hole at No. 8 McCarty Anderson farm, near Salt Lick, Bath county.

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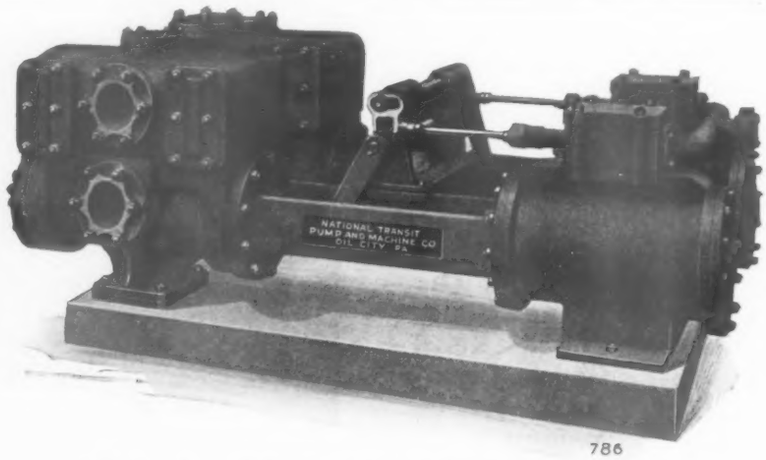

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By H. B. GOODRICH

Suggests Special Conditions Where Strainers Might Be Used

In the February 19th issue of the NATIONAL PETROLEUM NEWS a comparison was made between the hard and soft rock countries. It was stated that, in the latter, oil well strainer or "screen" has been successfully used in handling the loose running-in pay sands. The suggestion was made that even tho the strainer is unused and practically unknown in many eastern fields, for instance in Oklahoma, there are undoubtedly whole localities as well as individual cases in the hard rock country whereby employing a strainer on the oil string as a liner much operating expense could be saved. This applies to running-in soft sands which do occur even in the hard rock fields.

Three principal types of strainer for use on perforated casing, were described. There have been some improvements on these. One which uses a different principle has been quite successful in handling high pressure sand wells has been broadly described to the writer, but no detailed description is yet available.

The principle of the strainers is to effect the holding back of loose material that would otherwise clog and cut, and the straining of the oil through to the inner casing, free from sand where it is more cheaply handled by pumping. This is opposed to the method of permtiting free entrance of sand and lifting as much as possible to the surface, thereby increasing the underground oil drainage.

If one is willing to admit that any process which protects the future of a field is preferable to immediate larger gain, then the process which holds back the oil-containing material in situ, compatibly with practicable economic recovery of the oil, is the best one to be used. There is an underground equilibrium which is always more or less disturbed with the extraction of every barrel of oil: but the less it is unnecessarily disturbed the better, if we regard the hole from which the oil comes as a mine, which it really is. For its permanence and for the permanence of the neighboring bore holes or mines which are drawing from the same deposit the seat of the casing should not be jeopardized or disturbed, nor should the formations covering the pays be unduly undermined.

In the case of hard sands such as are found in the northeastern part of Oklahoma and Kansas the danger of this is not great, for even after a considerable "shot" of nitroglycerine and some cleaning out the sand does not run in appreciably. In other parts of Oklahoma even where the formations may not naturally be cavey, that very condition may be and often is caused by the shot.

Work For Specialist

Shooting of wells by nitroglycerine is a highly specialized part of the oil business. By reason of the dangerous nature of the explosive used and the hazards involved most operators are content to allow the other fellow, who has followed that line of work as a specialty, to handle nitroglycerine. Hence, from the early days of moonlight shooting this very interesting spectacular adjunct to oil production has been in the hands of comparatively few.

H. B. Goodrich

It has been more or less of a mystery, not only to the layman but to most of the operators who have their wells shot and possibly even to some of the shooters who personally handle it. For, after all, as in everything involved in oil production that occurs at depths underground the immediate action of an exploded shot can only be judged by results. A combination of experiences shows to the producer that in hard pay the oil-bearing formation is shattered, broken and seamed. In this way the natural porosity of the sand is increased, new channels are opened and the drainage surface is multiplied. The oil oozes, or flows under a liberated pressure into the well in greater quantity and the production is stimulated. Sometimes, in fact, certain tight formations do not yield naturally, but by opening up and fissuring, the "shot makes the well," where previously had been perhaps only a color of oil naturally.

The extent of influence of exploded nitroglycerine can generally only be estimated and varies with the size of the shot and firmness of the rock from a distance of 5 to 15 feet back from the hole, while in certain special cases where repeated shots have been exploded and subsequently the well has been cleaned and swabbed, a very great cavity has been produced. The general consensus of opinion is that in soft pays the effect of a shot is not to shatter, but to pack the sand so that the pores are closed and may be burned. In other words, in such soft sands, the effect of the explosion is not to improve production but to stop it.

The good operator, then, always determines by the character of his sand whether to shoot at all, and by the thickness and character the quantity of glycerine that should be used. The size of the shot is a matter for the exercise of good judgment, and judgment differs very much. After all, shooting is an experiment, and results in one locality have often set the fashion for others.

In Oklahoma the earlier shooting in the northeastern part was in quite tight, hard sand that would stand and required heavy shots, so that as development proceeded into other regions the idea of large shots, say 200 quarts or more, has rather prevailed.

Temptation Is Strong

Thru a very human rivalry of operators, an insistence upon maximum of production in a minimum of time, together with absolute confidence on the part of the nitroglycerine man in the efficacy of his commodity, there is always a temptation to shoot a well as hard as it will stand, approaching the danger limit. Many engineers look with disfavor upon large shots; and indeed, many very practical operators are in the habit of using many repeated small shots or squibs in preference to the larger charge in which there is always danger of underground damage. In this frequent squibbing production receives a stimulus as needed.

It seems that in this matter of shooting, which is a most important and vital part of the well history, just as in some other points that have been mentioned in previous papers, one thing should be guarded against. That is a delegation of authority, a shifting of responsibility from the operator to the shooter. The former, if

Continuing his discussion of the use of strainers in producing wells, Mr. H. B. Goodrich, editor of the Production Engineering Department, in this issue goes on to point out where strainers could be profitably used in hard rock districts. There are individual cases where running sands are found in the hard rock fields. Here the same procedure could be applied as has been earlier described. It is the opinion of Mr. Goodrich, also, that strainers might be set to advantage to cut down cleaning out operations after a well in hard rock country has been shot.—Editor.

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he is an up-to-date operator, should, and in fact does, figure closely upon the size and location of the torpedo, and see that it is correctly placed.

This requires a constant study of the formations, which is essential to a good and proper job. The person in charge of the well who is acquainted with its peculiarities is the only one qualified to render a decision. Certainly he is more so than the shooter, who may indeed give good advice, but whose main duty is to put in the shot, as required, in a workmanlike manner, but who may never have been at the well before, and is gone a few minutes after the shell is exploded.

It is not intended in this article to go thoroly into the business of shooting, but to point out the fact that precedence should not be relied upon unquestioningly. The fact that a large shot is good in northern Oklahoma does not make the same procedure advisable or correct in other parts of the state.

Formations Change

Now in many pools south and east of Tulsa the formations change to a marked degree. In place of the very regular oil-bearing sands of the north we have in such districts broken, irregular oil pays which require different treatment. The sands are lens shaped, and in the pays are breaks of shale, or tight places, or impermeable spots which are of fine texture, but soft. This is the "spotty" country often miss the sand completely, where producing wells do not prove up beyond doubt any great area and dry holes are said to condemn only their own diameter.

It is recognized that, if the nitroglycerine shell is so placed as to shatter shale or formations overlying the pay, the result is caving that covers the sand and hinders the operation of the well even when a pocket has been drilled below the shot. Such wells either result in long, tedious cleaning out jobs or in abandonment. One who looks up the dry hole records of any of these districts will find many where the claim is made that they were thus "shot into shale." Without knowing its history it would be impossible to determine whether this claim is justified by the fact in any individual case, but there are many where undoubtedly the misplaced shot was indeed the cause of failure.

When the pays themselves contain shale breaks the locating or spacing of the shell becomes even more complicated. For each one of these breaks becomes a constantly caving inconvenience and source of extra cost. The well must then be cleaned out. In the cleaning it may be that sufficient oil is recovered by swabbing to pay the cost, and so long as this is the case the operator may be perfectly content to clean out and swab until the caving stops.

In a very interesting hearing before the Oklahoma Corporation Commission upon the shooting of wells in the Healdton field (there had been some doubt as to its propriety in that softer sand country) one operator made the following statement:

"We were getting the production and we didn't care how long we stood there and swabbed." This was after the shot, and probably represents the attitude of most operators. However, when such cleaning out jobs take as much as six weeks or longer, during which a string of tools is held at the well and a crew of men employed, even tho oil may be saved in the process, one is impressed with this extra expense and is led to question whether it might not be avoided.

To take a concrete case, a small well in one of the above districts, which was more profitable than some, and where the swabbing recovery overbalanced the expense which is by no means always the case, the history is as follows:

Well had 16 feet of sand; shot with 30 quarts in July; cleaning out July 16 to August 18—35 days; cleaning out expense $30 per day—$1,050.00.

Swabbed and saved 1,349 barrels; less royalty 167 barrels; net oil swabbed 1,182 barrels at $2.25—$2,659.50; net profit $1,609.50.

This was during the period when production was greatest. At the end of 35 days' cleaning and swabbing, the well was tubed and pumped.

During the succeeding month the well made about 800 barrels (net) which brought about $1,600 profit. In other words, with a decline in production of about 31 per cent the profit was about equivalent during the first month of pumping when relieved of the swabbing and cleaning expense to that of the flush production period burdened by that expense.

It is admitted that cleaning out after the shot is necessary, and that the debris and cavings should be, in the main, removed before the well may be considered a finished producer, but in this particular case, and this is typical of many, there were short periods when bottom was reached and the well was temporarily clean. It is suggested that in this particular case and in other similar ones the strainer of type as described in former articles might be used to good advantage. It is admitted that it would be an experiment rather novel in the Mid-Continent field, but if successful, as there is very good reason to believe it would be, the extra profit during the days spent in cleaning out is obvious.

Inasmuch as the condition created by the strainer type does not differ greatly from the original natural underground conditions there would be no slump of the formations or sloughing toward the hole and the probability is that the strainer would not clog by caving except it might be at the bottom. If properly set the strainer can be removed if it is found to be clogged or if further cleaning out is necessary.

And in this connection it may be remarked that in the case cited above the well sanded up in about three months showing that even without the strainer there is no reliable permanency to a cleaning out job in formations containing streaks or breaks of shale or soft in character.

There is one objection to the strainer which may be more tenable, and that is the gumming up of the wires of the strainer itself or the closing of the capillary tracts of the sand by paraffining. The former was overcome in the Gulf Coast country by washing inside and outside, and a like process might be employed.

At any rate the use of strainer in conditions as described above is offered as a suggestion, with the realization that it is a departure from or addition to the regular modus operandi which may be useful in special cases.

The purchase of a fleet of nearly 200 tank cars is announced by the Smiley Petroleum Company, of Kansas City, Mo. Many of the cars are already in operation and the company is planning to open several branches in the near future.

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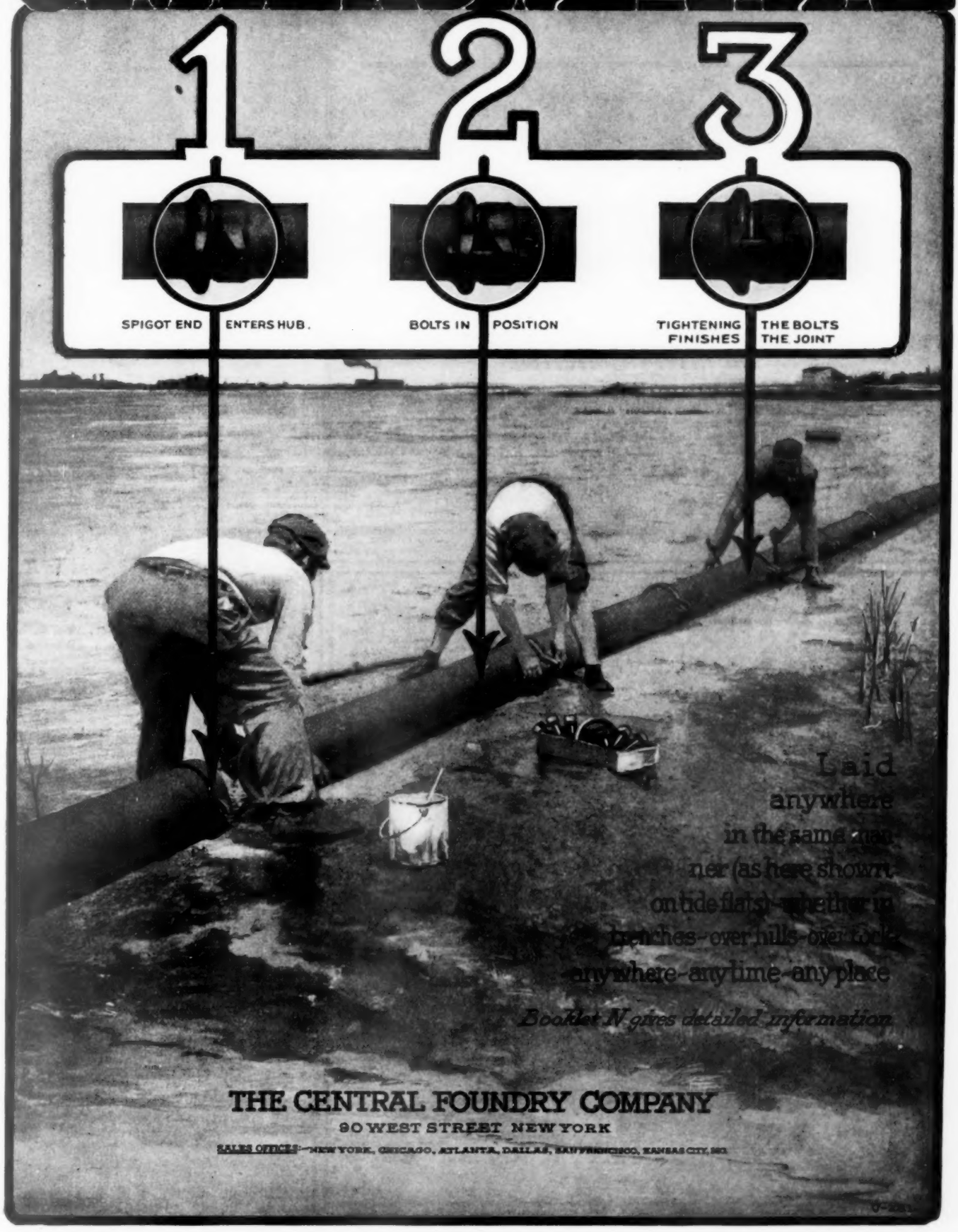

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French Found Way To Regenerate Oil

That reclamation of lubricating oil, by a process still surrounded by secrecy, was carried on on a large scale in France during the war, has but recently been made public. Out of France comes the story of how a government chemist employed by that nation began a series of experiments early in 1916, thru which he perfected a process by which used castor oil could be filtered and refined for further service in aviation motors.

His discovery, viewed skeptically by the authorities at first, led to the reclamation of this vegetable oil on a gigantic scale, and was the forerunner for the process by which, toward the end of the war, mineral oils were treated in the same manner and restored to further usefulness, both in aviation and automobile motors.

No figures are available as to the quantities of mineral oils regenerated by this method. It is claimed, however, that in the process, the loss seldom exceeded 10 per cent and it is said that the refining factory could sometimes work with a loss of only 5 per cent.

It was after the government aviation authorities had declined to interest themselves in the state chemist's discovery that the scientist brought his process to the notice of M. Meurisse, a photographer in France.

Meurisse had a wide acquaintance among French automobile manufacturers and managed to secure quantities of used oil from them to treat by the new process. One of the manufacturers let him have 300 gallons of used castor oil, but was frank in his declaration that he would not be very deeply interested in the results.

When, however, the oil had been refined by the newly discovered process and returned to the manufacturer, it was used in an engine undergoing a 50-hour test at full load. It is claimed that at the end of the test the castor oil was equal to new.

It was not long thereafter that engine manufacturers were soon convinced of the value of the discovery and in a short time practically all the French manufacturers were sending used castor oil to the regenerating factory, erected by Meurisse, to be reclaimed and returned. It is said that many thousands of gallons were so treated and returned during the remainder of the war.

Soon after regeneration became established on a quantity basis, the army authorities became interested, and a general order was issued to aviation commanders and truck commanders that no lubricating oil be thrown away.

Altho castor oil was the first to be treated by the Frenchman's method, it was not long before mineral oils used for lubrication were also put thru the process, and the results were said to be equally satisfactory. Details of the process are being withheld by the French authorities but it is said that in the process of regeneration certain chemicals are used.

With the cessation of hostilities other interesting facts are coming out of France in connection with automotive affairs. Figures available now, for instance, show how enormous were the quantities of gasoline used by the Allies in the last year of the conflict.

During October, 1918, it is shown, the Allied armies in France used a total of

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34,100,000 gallons of gasoline. This was apportioned among the three nations as follows: France, 14,600,000 gallons; England, 12,000,000; the United States, 2,500,000 gallons.

Peculiarly enough the consumption of gasoline by the armies in the field increased enormously after the armistice was signed. The increase was due to the lengthening of the lines of communication into enemy territory. The French army, it is stated, consumed 16,860,000 gallons of gasoline in November.

Consumption of gasoline in France has shown a steady increase since 1914. Official figures covering five years are as follows:

	Gallons
1914	178,500,000
1916	181,400,000
1916	240,000,000
1917	228,700,000
1918	365,400,000

Altho the gasoline shortage in France was often most acute and sometimes the strictest economy was enforced thruout the fighting organization, it is said by officials that the army was never, at any time, handicapped by a shortage for its trucks, tanks, airplanes, passenger cars and tractors.

Fence Forms Huge Tank Around Refinery

An oil refinery in California has evolved a safety device to prevent a loss of oil in the event that the large storage tanks at their plant should break.

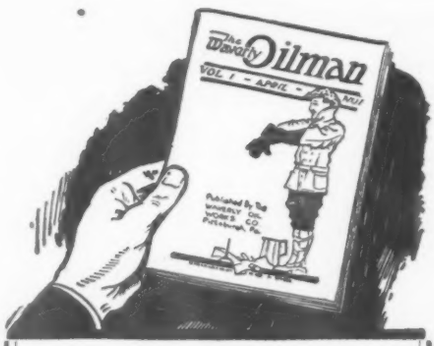
A fence, made with cement slabs that are moulded out with tongues and grooves on sides and ends surround the refinery. The ends fit together without mortar, while cement posts containing grooved sides fit over the end tongues of the slabs.

The slabs are easily detachable as occasion may require for gateway or other

purposes, making the fence a portable one. The fence is about six feet in height and the slabs measure ten feet in length, and are three inches thick.

In the event that a tank springs a leak all that is necessary is to close the gates in the fence, thus converting the entire enclosure into one large tank.

The Central Foundry Company, 90 West street, New York, has issued, for the information of the trade, an interesting booklet on Universal "Cast Iron Pipe in Every Service," which deals with various installations of this type of pipe. Copies of the book can be obtained by request directed to the company's office or to any of its branches.



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I. P. M. A. Of California Elects New Officers

By Special Correspondent

LOS ANGELES, CAL., Feb. 28.—The fourth annual meeting of the stockholders of the Independent Petroleum Marketers' Association of California, held at their headquarters in the Marsh-Strong building, Los Angeles, resulted in the election of the following board of directors: H. S. Botsford, Puente Oil Company; G. L. Holton, Turner Oil Company; F. R. Kellogg, Richfield Oil Company; A. E. Hurley, Hurley-Smith Company; G. L. Machris, Wilshire Oil Company; W. L. Standard, Union Oil Company; H. W. Heasley, California Oil & Asphalt Company.

At the meeting of the board, Mr. Botsford was elected president, Mr. Holton, vice president, and H. H. Maxson, secretary and manager. In every instance it was a re-election of the officers and directors who had served last year, with no opposing candidates.

Secretary-Manager Maxson's annual report showed the association membership to include eighteen representative refiners, jobbers and producers of California. His principal recommendation was to establish the coupon book system for gasoline and oil sales. Its main object had been attained—that of advertising the products of the Independents which are now being distributed from more than sixty service stations in Los Angeles alone as against thirty-eight of the Standard's. The public had learned that the Independent products were dependable, and at the same time the contraction of the margin of profit for a year past made the one-cent a gallon discount an absolute loss. The recommendation was adopted.

President Botsford, in his annual address, called attention to the success attending the close co-operation of the membership in exercising watchfulness over the movements of the opposition, in meeting the requirements with the best possible grade of products, and in maintaining a firm market in Pacific Coast territory.

A feature of the president's address was the suggestion of a co-operative gasoline and oil distributing system for Los Angeles, which evoked quite a discussion, at the conclusion of which it was agreed that a meeting be held at a future date to go further into the subject with all Independent refiners in this locality.

Announcement is made that Douglas Lynch Younger, formerly associated with R. Walton Moore, special counsel for the Associated Railroad and Steamship Companies of the Southeast, and general counsel of the Railroad Administration, has entered general practice of law. His offices are in the Munsey building, Washington, D. C., where he will be associated with Fayette F. Dow, Washington representative of the National Petroleum Association.

Fire destroyed the plant of the Magnolia Petroleum Company at Texarkana, Texas. A warehouse of gasolne, 13,000 gallons of oil, 3,000 pounds of axle grease and other goods were destroyed, aggregating a total of about $15,000. It was believed the fire was caused by backfire of a gasoline engine used in pumping gasoline from tank.

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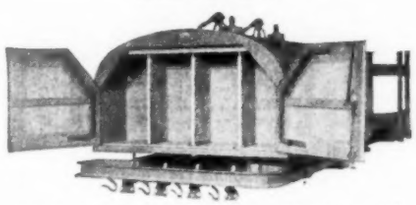

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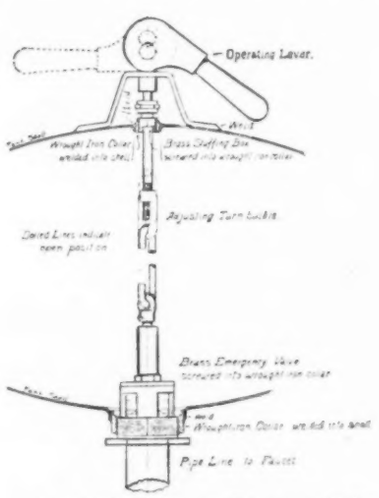

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LUBRICATING AND INDUSTRIAL OIL ENGINEERING

By JOHN ROME BATTLE
Bsc. in M. E., M. E.
Associate Member American Society Mechanical Engineers

Shoe Making Machinery Offers Many Problems In Lubrication

EVEN in the largest shoe factories the waste of oil and poor lubrication seems to be the general practice, and for that reason the oil engineer has an excellent opportunity to demonstrate the value of efficient lubrication.

The floors are usually badly oil stained, and in those mills having wooden floors it is not uncommon to find that the oil from the machines has dripped onto the floors in such quantities that it works its way thru the floor and onto the floor below.

The following machines are usually found in all shoe factories and their mechanical requirements and recommendations for lubrication are as listed:

Clicking machines are used to cut out the uppers. They have an eccentric motion, which should be lubricated with a gear grease or a medium worm gear lubricant. For the general lubrication of the machine an oil having a viscosity of 240-250 paraffine base or 325-350 asphalt base is recommended. Channeling machines are used to make a channel for sewing on the welt, and they operate at high speed. Only open oil holes are provided. For these machines an oil of about 175 viscosity paraffine base or 200 asphalt base is recommended.

Rounding machines are equipped with a cam motion, and also a gear movement, with a pantograph motion. For the gears use a soft cup grease and for the general lubrication of the machine use an oil similar to that recommended for the clicking machines. The stitching machines require a light oil of about 140-150 viscosity paraffine base.

The reinforcing machine for insoles is a high speed machine, and an oil similar to that recommended for the stitchers can be used with success. This also applies to the Puritan stitching machine, which is used for reinforcing for canvas.

Tackers Are Slower

The insole tacker machines are slow and have pinions and gears, and also cams. For these machines use the same oil as recommended for the clicking machines.

Jack rollers are used for the purpose of graining hides for use as uppers and require an oil similar to that recommended for the insole tackers. The large splitting machines are provided with gears and cone bearings on the emery shaft and for lubrication of the drive shaft, a No. 3 cup grease is recommended, while for the general lubrication of the rest of the machine an oil of the same character as that recommended for the clicking machine is recommended, altho a slightly heavier oil will be a little better.

On the stapling machine, such as the J. L. Morrison Company's "Perfection," which is equipped with a small motor drive, an oil having about 175 viscosity paraffine base or 200 asphalt base is recommended. A semi-fluid lubricant of about three-eighths the consistency of vaseline is also successfully used. The inking machine is a slow turning machine, having a revolving ink brush with open oil holes and is used for inking heels. The same lubricants are recommended for this machine as for the clicking machine. The same may be said for the burnishing machine, which is used for burnishing heels.

For the lubrication of brushing machines, used for brushing heels, and for buffing machines, sometimes called "bottom sanders," the same lubricants as used for the channeling machines are recommended. This also applies to gang brushing machines, which have open oil holes.

Needs Tacky Lubricant

Counter moulding machines have large cams and gears. The gears or pinions should be lubricated with a gear lubricant that is tacky enough to stay placed, but which is free flowing enough to permit of its application with a brush. For the lubrication of the driving pulley, toggle joint motion, slide, etc., an oil of the type recommended for the inking machine is recommended. One of the important factors in the lubrication of this machine is that the lubricant must have no tendency to creep onto the die.

Butting machines, such as the Stewart Brothers' type, are practically skivers, and the same lubricants are recommended as for inking machine lubrication. Slugging machines, or, as they are sometimes called loose nailing machines, are used for putting slugs into heels and the same type of oil as recommended for the inking machine may be used.

A machine which requires careful lubrication is the tree machine. This machine has a sprocket and chains and rollers, as well as individual motor drives and open worm gears and bevels. One of the important factors in its lubrication is that the shoe must be kept free from oil, especially in the case of shoes where the leather is unfinished. A semi-fluid lubricant of five-eighths the consistency of vaseline, or a soft cup grease, is recommended.

The heel seat trimmer is a fast moving machine, making about 5,000 to 6,000 r. p. m. and has open oil holes. For its lubrication a light oil of 145-150 viscosity paraffine base or 180 asphalt base is recommended.

There are two types of tack pulling machines. The rotary type which should be lubricated with an oil of 145-150 viscosity paraffine base or 180 asphalt base, and the lever type which should be supplied with the same lubricants.

Inseam trimmers are high speed machines and require the same lubricants as the above. Inseam welt stitchers, which are used to put on the Goodyear welt, should be lubricated with the same lubricants as the above.

John Rome Battle

In this article Mr. Battle takes up the methods used in the lubrication of machinery employed in the manufacture of shoes. In previous articles he discussed the subject of lubrication as it applied to machinery used in the textile industry.

These articles have proven of more than ordinary interest to NATIONAL PETROLEUM NEWS readers. In handling the various problems in the textile field, he revealed a keen insight into the intricacies of the various types of machines used to produce woolens.

Mr. Battle's first article on the lubrication of shoe machinery reveals an equally broad knowledge of this type of mechanism and should prove as thoroly instructive and interesting as those that have gone before.—Editor.

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Insole and heel seat trimmers have high speeds, ranging about 6,500 r. p. m., and require the same grades of lubricants as used on the channeling machine. The insole tackers are used to put the insole on the last and usually run in a poorly lubricated condition. They have an idle pulley and a clutch. A grease cup with a No. 3 cup grease on the idle pulley should be provided. Otherwise, the same lubricants as recommended for the inking machine will give good results.

The lasting machine is used to put the wire onto the toe of the sole and has an intermittent motion. The same lubricants are recommended as for the inking machine. This also applies to the marking machine, which puts the size and marking on the soles.

Pull overs are used for pulling uppers onto the last and temporarily holding them there with nails. It has an idle pulley and a clutch and foot pedal. The same lubricants are recommended as for the inking machine, with the exception of the idle pulley, which should be provided with a grease cup and No. 3 grease.

Nigger Head Machine

The nigger head, which is sometimes called a side laster, is usually not run efficiently. The usual custom is to allow these machines to run when no useful work is being done on them, which results in not only a waste of tacks, but also in a waste of lubricant. The lubricant recommended for this machine should have sufficient body to prevent its throwing onto the upper leather of the shoe and spotting it. The machine has cams, open worms, open oil holes, idle pulleys and sliding movements and gears. The same lubricants as recommended for the tree machine, with a grease cup on the idle pulley, is suggested.

The sole leveling machine is used to bring the sole down to shape and form it to the last. This machine has large, slow moving cams and a worm and gear. For the worm and gear, a soft worm gear lubricant is recommended, which should be capable of being brush applied, while for the general lubrication of the machine an oil having a viscosity of about 265-275 paraffine base or 325-350 asphalt base is recommended. A semi-fluid lubricant of one-half the consistency of vaseline will work well on this machine.

For the stitched separator or prick machine, which has a speed of about 540 r. p. m. and open oil holes, the same lubricants as used on the stapling machine are recommended. For rounding machines and edge trimmers, an oil of 175 viscosity paraffine base is recommended. These machines operate at very high speeds. This also applies to sanders, which are sometimes called heel scourers, and which operate at speeds as high as 2,300 r. p. m. Heel breast scourers also run at high speeds and should be supplied with the same lubricants.

On eyelet machines an oil having a viscosity of 145-150 paraffine base or 180-185 asphalt base is recommended.

Crimping machines have a slow, intermittent motion and the lubricants as recommended for the inking machine are used.

The out sole stitcher has the lubricant fed into the top, allowing it to follow down a slot against which the needle wipes, by which action it is lubricated, for the purpose of preventing sticking in the hard sole. The same lubricants as recommended for the inking machine are used. A black stitching wax is used on this machine, which does not help the lubrication.

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The Lubrication Of Air Compressors

Functions Of Lubricants Are Described And Grades Of Oils Best Fitted For Such Uses Given

THE accompanying article is a treatise on the lubrication of air compressors prepared by the Technical Committee of the Compressed Air Society, 30 Church street, New York. It goes at detail into the functions of lubricating oils in this use and the characteristics suitable lubricants should possess. The Compressed Air Society, made up of the manufacturers of air compressor machinery, is putting forth this data to overcome the lack of information it says exists regarding this particular field for lubrication.—Editor:

SATISFACTORY lubrication of air compressor cylinders is attained by securing (1) the reduction of friction to a minimum, and (2) elimination of carbonization of the oil as far as possible.

For the proper reduction of friction, the oil chosen should have sufficient body to sustain the weight of the moving parts and to form a seal between the piston rings and the cylinder walls, and still not absorb excessive power in the overcoming of the viscosity of the oil itself.

The objections to air cylinder oils which allow more than the very slight amount of carbonization which appears unavoidable, are, of course, well known, but may be briefly stated for the purpose of clarifying what follows:

Carbonization of the oil allows the accumulation of deposits of carbon which are sticky in the early stages of their formation but hard and flinty later. Such deposits accumulate on the cylinder valves, in the cylinder passages, in the pipes and eventually in the air receiver.

Sticking or partial closing of the valves and their consequent failure to act properly is probably the chief objection to this action from the standpoint of the efficient operation of the compressor.

The formation of excessive carbon deposits is apt to be due to any one or more of the following causes:

1. The ill-advised use of some oil, such as a steam cylinder oil, which easily decomposes in the heat of the air cylinder.

2. The use of oils of too great a viscosity—commonly referred to as "too heavy oils." These do not atomize readily and, therefore, remain too long upon the hot cylinder walls, etc., thus baking down to sticky carbon deposits.

3. The use of too great quantities of oil which has the same effect as the use of too heavy an oil as far as the carbonization is concerned.

The failure to provide a proper screen over the air intake of the compressor, thus allowing free entrance of dangerous dust (especially coal dust).

The objections to this carbonization aside from the sticking of air valves and choking of the air passages is the menace of fire entailed by carbon deposits. Carbon particles torn loose from them may become incandescent from causes which could not be anticipated by the compressor manufacturer. If such incandescent carbon particles should happen to come in contact with "oil vapor" given off by the lubricating oil, a fire might possibly be started whose menace would be small or large, depending upon how much carbon had been allowed to accumulate in the compressor and piping to the receiver. If these are kept properly cleansed at all times, there should never be a time of any danger.

Heat of Air Compression

The selection of an air cylinder lubricant is, of course, governed to a considerable extent by a knowledge of cylinder temperature it must withstand. Knowing the air pressures, the corresponding temperatures are ascertained fairly accurately, as shown in Table No. 1.

This table gives the final temperature in the cylinder at the end of the compression stroke, for single stage, also for two-stage (or compound) compression, when the free air entering the cylinder is 60 degrees F.

Table No. 1—Cylinder Temperatures at End of Piston Stroke

Air Compressed to Lbs. Gauge	Final Temp. Single Stage	Final Temp. Two Stage
10	145 F.	.....
20	207 F.	.....
30	255 F.	.....
40	302 F.	.....
50	339 F.	188 F.
60	375 F.	203 F.
70	405 F.	214 F.
80	432 F.	224 F.
90	459 F.	234 F.
100	485 F.	243 F.
110	507 F.	250 F.
120	529 F.	257 F.
130	550 F.	265 F.
140	570 F.	272 F.
150	589 F.	279 F.
200	672 F.	309 F.
250	749 F.	331 F.

Variations from these temperatures will occur in actual practice due to water jacketed air cylinders and radiation, tending to lower the temperature at the higher pressures. But at, say, 50 pounds pressure and lower, the heat is likely to be somewhat greater than given by the table, particularly if the compressor is run at high speed, and also if it is not water jacketed.

The natural inference of the reader is that he must select an air cylinder oil whose flash point is higher than the maximum temperature apt to be encountered within the air cylinder. As a matter of fact, this is not the case and it need only be carefully noted that the study of the air cylinder temperatures is useful mainly in testing lubricating oils to determine their resistance against breaking down into carbon, etc. But such temperatures cannot be taken as limits establishing the highest allowable flash point for a lubricant safe to use in the air cylinders.

Qualities of Cylinder Oils

For average normal conditions, the oil should be a medium bodied pure mineral oil of the highest quality, not compounded with fixed oils such as animal or vegetable, and should be carefully filtered in the final process of manufacture.

Quite a range of oil composition is permissible for lubricants approved for this work, which are manufactured under the above conditions. Primarily a distinction must be made between those oils having a paraffin base as distinguished from those having an asphaltic base.

From a strictly operating standpoint —so it is claimed by some lubricant manufacturers—there is no distinction between these two classes of lubricants as to their desirability as compressor cylinder oils, provided that both have been properly filtered in the process of manufacture to remove the carbon-forming elements. If any carbon should be formed, however, such carbon deposited by the asphaltic base oils is of a light fluffy nature and easily cleaned out, whereas that deposited by the paraffin base oil is very adhesive, and characterized by the hard, flinty nature.

Merely as a guide to aid the operator in specifying the qualities to be pos-

Table No. 2—Physical Tests of Paraffin Base Oils

	Minimum	Average	Maximum
Gravity, Baume	28 to 32 deg.	25 to 30 deg.	25 to 27 deg.
Flash Point, Open Cup	375 to 400 deg. F.	400 to 425 deg. F.	425 to 500 deg. F.
Fire	425 to 450 deg. F.	450 to 475 deg. F.	475 to 575 deg. F.
Viscosity (Saybolt) at 100 deg. F.....	120 to 180 sec.	230 to 315 sec.	to 1500 sec.
Color	Yellowish	Reddish	Dark Red to Green
Congealing Point (pour test deg. F.).....	20 to 25 deg. F.	30 deg. F.	35 to 45 deg. F.

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sessed by an air cylinder lubricant from a paraffin base oil, recommended for average duty, Table No. 2 is presented.

It is suggested that those oils within the range expressed by the minimum figures be used for light duty of low-pressure and temperatures, while those expressed by maximum figures should be used for high pressures and temperatures.

It is recommended that any paraffin base lubricant intended for use in "all standard air compressors" should meet the physical tests imposed by the average range of figures given in the middle column of the above table. The above wording "standard air compressors" is to be interpreted as includng the following types of machines:

(a) Low pressure up to 100 lb. compressors, which may be either small sized single stage units, or larger sized compound machines.

(b) High pressure compressors which are constructed with the proper number of stages so that no excessive temperatures are ever reached.

In other words, this lubricant of average test figures is always recommended unless a compressor manufacturer specifies in his literature that a high flash point oil should be used to meet the conditions peculiar to his machine. It is thus obvious that it is never necessary that a lubricant should possess a flash point as high as 500 degrees unless abnormal conditions of high temperature prevail. Such high flash point oils have an unusual tendency to produce carbon deposits.

Lubricating oils with an asphaltic base are considered separately for the reason that the lower limit of gravity stated in the above table, viz., 25 deg. Baume, eliminates this entire group from consideration—which is not the intention of this article. As a guide for the selection of suitable oil, Table No. 3 is given above.

For general all-around use, it is conceded that the recommendations given in Tables Nos. 2 and 3 above cover the situation as well as possible, special cases, of course, requiring investigation and special consideration before making recommendations.

Table No. 3—Physical Tests of Asphaltic Base Oils

	Minimum	Average	Maximum
Gravity, Baume	20- 22 deg. F.	19.8- 21 deg. F.	19.5-20.5 deg. F.
Flash Point, Open Cup.	305-325 deg. F.	315-335 deg. F.	330-375 deg. F.
Fire	360-380 deg. F.	375-400 deg. F.	385-440 deg. F.
Viscosity (Saybolt) at 100 deg. F.	175-225 sec.	275-325 sec.	475-750 sec.
Color	Pale Yellow	Pale Yellow	Pale Yellow
Congealing Point (pour test)	0 deg. F.	—0 deg. F.	—0 deg. F.

Table No. 4—Quantity of Air Cylinder Lubricant Required per 10 Hour Day

Diam. of Cylinder Inches	Size of Cylinder Inches	Drops Oil per Minute	No. Pints Oil Required per 10 Hrs.
8	8 x 8	1	.0375
12	12 x 12	2	.0750
18	18 x 18	4	.1500
24	24 x 24	6	.2250
30	30 x 30	8	.3000
36	36 x 36	10	.3750
42	42 x 42	12	.4500

*Figures of last column are based upon an estimated 16,000 drops per pint of oil at 75 degrees F.

Proper Quantity of Lubricating Oils

The quantity of lubricating oil to feed to the air cylinders of compressors cannot be stated in exact terms due to the varying viscosity of different oils, the heat of compression and the size of cylinder. It may be stated in general, however, that after the cylinders have acquired smooth and polished surfaces, the quantity should be reduced to the lowest limit to avoid the possibility of the accumulation of carbon and sooty deposits within the system due to excessive use.

The basis of quantity given in Table No. 4 is recommended, subject to above modifications for these cylinders or equivalent sizes, operating under normal conditions.

It will, of course, be carefully noted and clearly understood that the results in the last column of Table No. 4 are based upon the assumption that under average conditions of temperature and usual range of oil viscosities, a pint of oil will contain an average of about 16,000 drops. It is, of course, understood that these figures are offered merely as an approximate guide and that every individual must exercise his own judgment in modifying them wherever his own particular set of working conditions is unusual.

A leading authority on compressor engineering contributes the following: "The best way to determine the proper amount of lubrication is to take out the valves from time to time and examine the cylinder. All parts should feel that there is oil thereon. If they feel dry, the lubricators should be adjusted to feed a little more oil, whereas if oil lies in the cylinder and its parts show excessive oil thereon, the quantity fed by the lubricators should be reduced. By thus examining the machine a few times, the proper amount of oil can be determined to suit the characteristics of the particular lubricant used and the conditions under which the machine operates." This is a better way to finally determine the quantity of oil required than by adopting without this experimenting any tabulated number of drops.

Steam Cylinder Lubrication

The proper quantity of oil to be fed to steam cylinders is much greater than to air cylinders, due to the constant washing away of the oil by the steam. Approximately four times as much oil will be needed in the steam cylinders as in those for air, subject, of course, to variable local conditions.

Depending on its viscosity, a pint of steam cylinder oil will furnish from 5,000 to 8,000 drops, and taking an average of about 6,500 drops, and four times as much oil as air cylinders of same size, and working at same piston speeds, as given in Table No. 3, the recommended amounts to feed the steam cylinders or their equivalents are given in Table No. 5.

Table No. 5—Quantity of Oil for Steam Cylinder Lubrication

No. Drops Per Min.	Cylinder Size Inches	Pints Oil per 10 Hrs.
4	8 x 8	.4
8	12 x 12	.75
16	18 x 18	1.5
24	24 x 24	2.25
32	30 x 30	3.0
40	36 x 36	3.75
48	42 x 42	4.5

These figures are approximate only, and will vary with the steam conditions, the kind of oil used, and its method of introduction into the steam, also with the boiler compound carried by the steam into the cylinder.

Conclusions

When the operator of an air compressor succeeds in obtaining lubricating oils that are giving satisfactory results, he should be very cautious about making a change to other grades, particularly if cheapening the cost is advocated by purchasing and sales agents. But if a change is decided on, the performance of the new lubricants should be most carefully checked up before damage can occur to the rubbing surfaces of the compressor, and to see that no increased amount of deposit collect on the inside walls of the air receiver.

The most satisfactory way to get the quickest results is to put up the problem of lubrications to the local experts of any reputable lubricating companies, and to be governed by their recommendations, which, however, should be based on the foregoing statement.

Petroleum Is Among Burma's Big Products

Petroleum and petroleum products rank next in importance, after rice, in Burma, according to a report by the American Consul at Rangoon, published in the United States Commerce Reports, and are annually exported to the other provinces of India and to foreign countries to the value of $20,000,000. Still, fuel oil is sometimes brought in from the Dutch East Indies and a considerable quantity of petroleum products, chiefly high-grade kerosene and lubricating oils, are imported into Burma mostly by American firms.

Petroleum which has a flash point at or above 200 degrees F. and is proved to the satisfaction of the collector of customs to be intended for use exclusively for the batching of jute and other fiber or for lubricating purposes. Petroleum which has a flash point at or above 150 degrees F. and is proved to the satisfaction of the collector of customs to be intended for use exclusively as fuel or for some sanitary or hygienic purpose, pays an import duty of 7½ per cent ad valorem.

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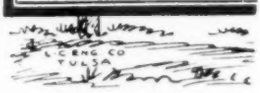

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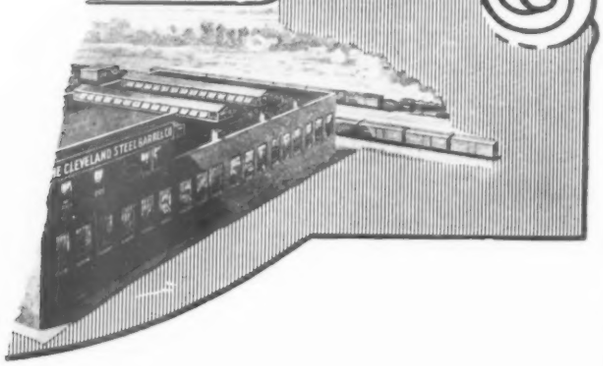

WHAT'S WHAT - IN CHICAGO - WHO'S WHO

Capt. Lipsner Gives Up Air Navigation

By Special Correspondent

CHICAGO, March 1.—Capt. B. B. Lipsner, formerly connected with the Texas Company here, and later superintendent of the United States airplane mail service, resigning to form the Aerial Navigation Company of America, with offices at 406 Continental-Commercial Bank building here, late this week closed his offices, deciding after weeks of investigation and the expenditure of several thousand dollars that commercial aviation is not a feasible proposition as yet.

In a letter sent to the Aero Club of America he gave his reasons, the letter reading in part as follows:

"That commercial aviation is neither yet nor soon is my honest opinion. Many weeks of investigation have convinced me that I should not ask those financially interested with me in the Aerial Navigation Company of America to risk any money at this time in air transportation. I would be sacrificing real friendship, loyalty to me, and a respect for my opinion which were supported by promises of financial backing to more than a million dollars.

"I have been able to find only one ship large enough to make a test flight to prove the feasibility of aerial transportation and the owners of that seaplane inform me that there is difficulty in getting the license from the government, as the ban on civilian flying has not been lifted. The big heavy navy planes, of course, are not available. Public interest seems to be dead. Private interest is not what one might call alive."

W. H. Bell, of the Midco Oil Sales Company, left this week for Arizona, where he will spend a three weeks' vacation on a ranch. Joseph Kuper, of the fuel oil department of the company, has resigned and is now in Tulsa, tho what his future plans are he has not yet announced. Jesse Finston, president of the company, returned here the first of the week from an extensive business trip, and then left immediately for Tulsa. Secretary-treasurer T. F. Kuper returned late last week from a trip of several weeks in the east.

Upon the retirement of "Jack" Thomas from the firm of Johnson & Thomas, oil operators, with offices in the Westminster building, the name has recently been changed to the House of Johnson, the newly organized concern continuing to operate the Westminster Oil & Gas Company at the same address. Mr. Thomas intends to resume operations for himself in the Texas fields. E. N. Johnson, president of the House of Johnson, spent several days out of town late this week, returning Saturday.

C. A. Gustafson, of Anderson & Gustafson, has gone to the Oklahoma operations of the firm to look after business matters there.

Local members of the Petroleum Club have been "lost" this week by the removal of the paraphernalia to the new quarters in the Palmer House. Workmen have been busy all week constructing the new rooms, but it is not expected the new quarters will be officially opened before March 15th, according to Secretary R. B. Foster. At that time it is probable a special "shindig" will be staged. In addition to two card rooms, there is a large reception room and a billiard room with space for more tables than were permissible at the Morrison Hotel.

G. B. Williams, of the tank car department of the Chicago office of the Johnson Oil Refining Company, is spending several days at the Lawrenceville, Ill., plant of the company on both business and pleasure, being expected back Monday.

The Sinclair Refining Company will remodel the filling station it recently purchased from the Riverside Oil Company of Illinois, on Elston avenue, and will install new and larger equipment and will make a large dump station out of the site.

Directors of the Johnson Oil Refining Company, of Chicago Heights, Ill., met at the Chicago offices in the Continental-Commercial Bank building Friday to talk over the past year's activities and to make plans for the coming year. Among those in attendance were J. J. and I. H. Johnson, and A. F. Hickey, general sales manager, all of Chicago Heights, and Mr. Swan, of Elmira, N. Y. Homer Johnson, who conducts the Central Refining Company's plant at Lawrenceville, Ill., was unable to be present, himself and his whole family being sick with influenza. Mr. Lilly, of Chicago Heights, assistant secretary of the Johnson Oil Refining Company, is another member of the firm confined to his home with the "flu."

A. F. Garrett, of the Roxana Petroleum Company, left Thursday on a trip to the New York offices of the company. W. K. Evans returned early in the week from a business trip of two weeks' duration spent in eastern territory.

Sinclair Salesmen Meet In Conference

By Special Correspondent

CHICAGO, March 1.—With the purpose of stimulating its sales representatives to greater activity, a number of salesmen of the Sinclair Refining Company from various sections of the country gathered at Kansas City this week for a two-day conference.

Prospects for the coming year's business were discussed and the salesmen instructed how to be prepared to go after the enormous business that is expected. Among those from the Chicago office who attended were J. A. Cannon, in charge of the lubricating department; John T. Berry, W. F. Parrish and several lubricating engineers.

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Relief Promised Pennsylvania Refiners In Matter Of Rates

By E. U. Baker, Traffic Manager, Foco Oil Co., Franklin, Pa.

Shortly following the signing of the armistice, the Independent Oil refiners in the Oil City-Franklin District, thru their traffic departments, took up with carriers for adjustment the question of a pernicious rate situation on short haul oil traffic that had grown out of certain war measure rate advances, and which up to the signing of the armistice were tolerated as a patriotic duty.

The situation is such that rate advances made have in some instances advanced rates on petroleum and products upwards of 100 per cent, and has had the effect of establishing considerably higher rates in some cases for short haul than for long haul movements in the same territory, the shorter haul being within the limits of the longer haul, over the same rails and under similar circumstances, which is contrary to the laws governing.

This situation was so succinctly placed before the Buffalo District Freight Traffic Committee, by the National Petroleum Association, from data furnished by the local Oil City-Franklin refinery representatives, that the Buffalo Committee of the United States Railroad Administration, E. H. Croly, chairman; B. E. Morgan, J. E. Wilson, paid a visit to the territory on Tuesday and Wednesday, February 18th-19th.

After an extensive conference at the Park Hotel, Franklin, with representatives of the New York Central, Erie, and Pennsylvania Railroads and all the oil ifterests, the committee visited the various plants in the district, leaving for Buffalo Wednesday noon, after having faithfully promised to do the best they could under existing regulations to relieve the situation.

Whatever relief is granted, will, of course, inure also to the benefit of the two larger oil corporations at Franklin, the Eclipse Works of the Atlantic Refining Company and the Galena Signal Oil Company; who, although not members of the National Petroleum Association, were invited to participate in the discussions.

The Independent local men also have up for modification, with considerable hope of success, a re-consigning rule, which became effective last May, requiring the payment of combination of local rates to and from re-consigning point, plus a re-consigning charge, on cars, after placed for unloading, which for some reason may be rejected and re-consigned to another destination, instead of payment of re-consigning charge and protection of thru rate, point of origin to the new destination, as heretofore.

This is an important matter to the oil trade as the rule is universal, and cars are invariably placed for unloading at the first destination before occasion arises to reconsign, and there is considerable difference between the combination of local rates and the thru rates, in some instances $100 per car or more, which the traffic must stand under this rule as at present.

It is believed this rule was established largely for the purpose of overcoming the practice of consigning unsold goods to large commercial centers, Chicago, Pittsburgh, etc., glutting such markets, congesting terminals, delaying equipment, etc., but which has not been accomplished, as it is still permissible, under the rule as published, and the combination of local rates is only enforced where cars are actually placed for unloading.

Cars not so placed, but held in break up or hold yards of carriers, may still be reconsigned and the thru rate point of origin to the new destination protected by the payment of a reconsigning charge of $5 per car. Consequently the apparent object sought under this new rule remains uncharged, and is still protected by its construction, while the bona-fide consigned traffic is penalized.

Sinclair Man Off On Tour Of World

By Special Correspondent

CHICAGO, March 2.—Announcement has been made here that Sheldon Clark, a vice president of the Sinclair Refining Company, left New York several weeks ago on the first leg of a tour of the world in the interests of the company. His first stop will be at Buenos Aires, he being expected to arrive there on March 3.

He will visit other prominent cities of South America, looking into business prospects there, especially with reference to sales of lubricating oils, and it is probable he will make arrangements for representation of the Sinclair Company in each prominent city that he visits. After leaving South America he is expected to go to London and the other large continental cities and perfect arrangements there for the company.

While his initial trip is expected to consume three months' time, a high official in the Chicago office stated that Mr. Clark may visit countries in other parts of the world before he returns and it is very doubtful if he will return in the stated time. At the present time the company is receiving many inquiries from foreign sources for its products, only this week one inquiry asking for quotations on 12,000,000 gallons of kerosene.

In addition there are many large orders in prospect for gasoline and lubricating oils as well as kerosene and it is to look after this business that Mr. Clark has been sent to make the proper arrangements. That the selection of Mr. Clark for this mission is a logical and wise one and that Mr. Clark is not lacking in the necessary experience, is indicated by the fact that this will be his second trip abroad for the company.

A pamphlet on Concrete Tanks for Oil and Gasoline Storage, prepared by M. I. Strauss, secretary of the Federal Process Company, Cleveland, O., has been issued by that company, and contains much interesting information on the application of the concrete idea in connection with storage tanks.

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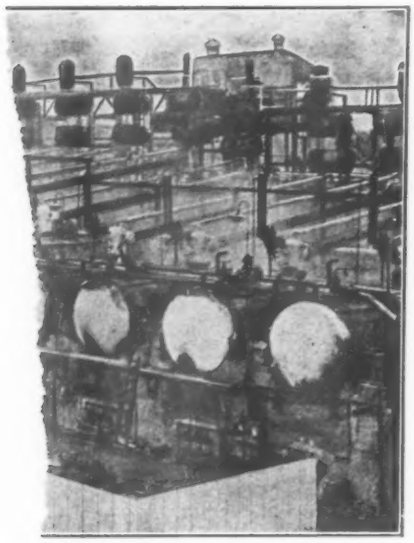

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REFINERY, TANK WAGON MARKETS

Present Conditions Encouraging

ANALYZING conditions in the oil industry as they appear the first of this month, as compared with two months ago, it becomes fairly evident that the fears entertained by many and openly expressed by some that this was to be a year of falling prices for oil products generally were groundless. Prices at the refinery have suffered to some extent, mostly on fuel oil, however, but the tank wagon markets have held up considerably except at two points, Chicago, where a price-war has been on, and Pennsylvania, where the kerosene market was reduced one cent.

High Gravity Crudes Firm

There are no indications now of reductions in the price of the lighter gravity crudes, despite the reductions made over the past few weeks in the heavier oils with a slight or no gasoline content. As long as the crude market as a whole holds its strength there is not so much to be feared from slipping prices in other branches of the industry.

Exports Now on Increase

Figures as to the export movement of petroleum products in January are very encouraging. They show a large increase over the December movement overseas, and very close to the total for shipment during January of last year, when the war demand was the all-important factor. Just now the export call for kerosene is at a point where the eastern refiners are using the refined oil pipe line again to hurry their stuff to seaboard.

Marine Demand for Fuel Oil

The fuel oil situation in the west has been helped materially by the offer of the large companies to take the present surplus and put it in storage. It is now being said this offer may be amplified to benefit a larger number of refiners and to allow these plants to start the motor-fuel season about under normal conditions. In the east there has been reports of bids for large quantities to be asked in the near future by the Emergency Fleet Corporation for its vessels. Bids for 400,000 gallons for vessels of the fleet on the Great Lakes alone have already been asked for.

Predict A Stronger Market For Fuel Oil

By Special Correspondent

PITTSBURGH, March 3. — The eastern refinery market begins to show some elements of strength due partly to natural and partly to artificial causes. The fuel oil market for the time being at least has struck bottom. Matters are being worked out, it is reported, whereby the smaller plants may be relieved of their present surplus of this product and allowed to start the season just now opening under normal conditions.

The Cleveland office of the U. S. Shipping Board has been advertising for bids on 400,000 barrels of fuel oil for delivery to Great Lakes points. This is taken to mean there will be a constant demand for this product from lake shipping this summer. It has had some effect in lending firmness to the fuel oil situation. Also there have been reports from New York and Washington as to the needs of Emergency Fleet vessels this year, which place the quantity of fuel oil that will be taken at a figure that would soon wipe out the present surplus. Most refiners are holding their figure at 5 cents a gallon. A certain amount can be bought under this figure, but not as much as could have been picked up two or three weeks ago, it is likely.

The export demand for kerosene is having its effect on this market at present, many of the refining plants here shipping this product via the old Pure Oil Company pipe line to Marcus Hook. They are getting around 9½ cents a gallon for 47 water white. How long this strong export demand will hold up no one can tell, of course, but it is strengthening the markets here materially. The domestic demand for kerosene is light, but the market is being generally held to 9½ cents.

Gasoline prices are firm at about last week's quotations. No lower prices are anticipated by the refiners in this section, who look to see domestic demand pick up considerably by the middle of this month. The higher-gravity products are in a little firmer industrial demand.

Kerosene Market Continues In Strength

Staff Special

TULSA, March 3.—Kerosene during the past week continued to show the greatest strength of any of the refined products. Practically all the burning oil they can get is being sought by the big marketing concerns that handle the export business and they seem unable to get enough. The big demand is reflected in the price which is three-quarters of a cent to a cent better than the prices ruling last week.

While the gasoline demand shows no sensational increase during the week, it has continued the gradual upward curve that began about three weeks ago and prices generally, all grades considered, are tending steadily upward. Marketers are finding the light stuff harder to buy than was the case two or three weeks ago, the refiners showing a tendency to hold on to it until the increasing demand forces a better price.

The fuel oil market continues at a low ebb, altho it is showing some signs of new life since the offer of the Standard of Indiana, the Carter Oil Company and the Empire Company to take 1,250,000 barrels at $1.20 was announced a week or so ago. Only 500,000 barrels of fuel was offered by the Independent refiners in response to this proposal, evidently indicating that only those refiners who absolutely must sell their stuff are responding, the rest holding on in the hope that the Standard may continue the period of the offer and make a little better price.

Foreign Opportunities

In the Commerce Reports of the past week, issued by the Bureau of Foreign and Domestic Commerce, the following trade opportunities appear of interest to oil men seeking foreign markets. In writing for further information, address the Bureau at Washington, D. C., and refer to the opportunity by the number given. Inquiry concerning each opportunity should be made on a separate sheet of paper:

28433—An agent in France desires to secure the representation of American firms for oil and greases. Correspondence should be in French. Reference.

28437—A company in Switzerland wishes to secure an agency for the sale, among other commodities, of lubricants and mineral oils.

28441—A company in England desires to secure the sole agency for the sale of machine oil and other lubricants. References.

28449—A firm in India desires to purchase and to secure an agency for the sale of kerosene and lubricating oils. References.

28452—A commercial agency in Honduras desires to represent firms for the sale of oils and greases. Quotations should be f. o. b. American ports. Correspondence may be in English.

More Activity In Chicago Oil Market

By Special Correspondent

CHICAGO, March 3.—The local market on fuel oil continues to firm up by general report and in buyers' cars this week 90 cents is reported as the going price for spot delivery, with $1 on contracts, long time delivery. Now that the government has validated manufacturers' contracts it is expected that greater activity will be noted.

Kerosene still retains its lead over all other petroleum products as to activity and, with the numerous inquiries that have been received by local concerns, it is expected that prices will gradually advance.

Gasoline, while slowly firming up, is said to be a good buy at present prices because of anticipated demand in the near future. One prominent marketer declares he is storing all he can get hold of, for he firmly believes that a shortage this summer is imminent. He also says he expects to see advances in the tank wagon market before long. Lubricating oils are declared to be in good sale, while gas oil is slightly firmer in tone. Naphtha is said to be the only "weak sister," due, it is said, to the lack of demand for blending purposes.

One local oil man declared that last week that despairing of the government making any settlement in the near future, he accepted a settlement on one large contract at a considerable loss to his company.

"The proposition was put up to us," he said, "with a take it or leave it stipulation, and, after giving due consideration to the matter, we decided to accept the government contractors' proposition, even tho at a loss to us, for we did not believe the government would take any quick action on the matter."

Other oil men who have been complaining of the procrastination of the government now declare that this is the one thing needed to stimulate business, especially that of manufacturers who have held back placing their requirements for petroleum products.

The January jobbers' issue of the Waverly Oilman affords a fine example of the possibilities of process printing as used in the reproduction of colors. A group of the company's non-viscous oils are illustrated in their natural colors, the coloring being strikingly accurate.

Refinery Markets, All Products

Following are the average market prices on the more important petroleum products in cents per gallon f. o. b. refinery in both Oklahoma and Pennsylvania. These are actual prices at which the bulk of each product is moving from the refineries at the present time. Anyone having knowledge of different prices which have obtained on any considerable quantity of any of the products mentioned will greatly favor us by advising us at once.

Prices effective March 4.

GASOLINE AND NAPHTHAS

Pennsylvania	Prices March 4
54 Naphtha	17½-17¾
58 Naphtha	19-19¼
60 Straight-run gasoline	20-20¼
62 Straight-run gasoline	21-21¼
64 Straight-run gasoline	23½-23¾
68 Straight-run gasoline	26-26½
60 Blend	19½-19¾
64 Blend	20½-21
68 Blend	21¼
Oklahoma	
50-52, 450 end point	14½
52-54, 450 end point	14¾
54-55, 450 end point	15¼-15½
56-57, 450 end point	16½-16¾
58-59, 430 end point	17¼-17¾
60-61, 400 end point	17¾-18½
62-63, 375 end point	18½-19¼
64-66, 365 end point	21-21½
80-84 Raw Casinghead	24
68-70 Blend	18¾-19¼
66-68 Blend	18½-18¾
60-62 Blend	16¾-17¼
58-60 Blend	16¼-16¾

BURNING OILS

Pennsylvania	
47 Water White	9½
48 Water White	10¼-10½
300 Burning Oil	10½-10¾
Oklahoma	Prices March 4
42-43	7½-7¾
44-46	9¼-9¾
42-43 Distillate	7¾-7½
32-36 Gas Oil	3½-4½

NEUTRAL OILS

Pennsylvania	
200 Vis. No. 3 Assoc. Filt	25
180 Vis. No. 3 Assoc. Filt	23
150 Vis. No. 3 Assoc. Filt	20-20½
Oklahoma	
100 Vis. No. 2 Color	10½-11
200 Vis. No. 3 Color	20½-20½
160 Vis. No. 4 Color	15½
200 Vis. No. 4 Color	18½-18¾
200 Vis. No. 5 Color	16½-17

CYLINDER STOCKS

Pennsylvania	
600 Steam Refined	21¾-22
650 Steam Refined	22¾-23
635 Steam Refined	22½-22¾
600 Flash	23¾-24
600 Amber Filtered	28¾-28½
600 Medium Filtered	38½-39

WAX

Pennsylvania	
122-124 White Crude Scale Wax, N. Y., lb.	8¼
124-126 White Crude Scale Wax, N. Y., lb.	8½
Oklahoma	
122-124 White Crude Scale Wax	9

FUEL OIL

Pennsylvania	
38-40 Fuel Oil	5
40-42 Fuel Oil	5¼-5½
Oklahoma	
24-26 Fuel Oil, per bbl., Cleveland delivery	$1.00
28-30 Fuel Oil, per bbl., Cleveland delivery	$1.10
30-32 Fuel Oil, per bbl., Cleveland delivery	$1.20
Fuel Oil, buyers' cars, bbl	.80

Refiners' and Jobbers' Supplies

Following are the average market prices for the week on the principal materials used by refiners and jobbers, f. o. b. shipping point as effective Feb. 28, 1919.

Refiners' Supplies	Feb. 22	Feb. 28
Soda Ash	$2.75 cwt.	$2.75 cwt.
Silicate of Soda	2.00 cwt.	2.00 cwt.
Sal Soda	1.75 cwt.	1.75 cwt.
Caustic Soda	3.75 cwt.	3.75 cwt.
Jobbers' Supplies		
Degras Oil	60c gal.	60c gal.
English degras	15c lb.	15c lb.
Domestic degras	27c lb.	14½c lb.
Chloride of Lime	2½c lb.	2½c lb.
Horse Oil	18c lb.	18c lb.
Lard Oil—		
Ex winter strained	$1.43 gal.	$1.27 gal.
No. 1	1.08 gal.	97 gal.
Extra	1.38 gal.	1.22 gal.
Extra No. 1	$1.20 gal.	1.04 gal.
No. 2 Lard	1.06 gal.	95 gal.
Tallow Oil	1.28 gal.	1.27 gal.
Neatsfoot Oil—		
Pure	$2.03 gal.	$1.52 gal.
Extra	1.20 gal.	1.04 gal.
No. 1	1.08 gal.	97 gal.
Menhaden fish oil	1.25 gal.	1.10 gal.
Whale oil	1.30 gal.	1.30 gal.
Soya bean oil	16½c lb.	16½c lb.
*Rosin oil, 1st run	70c gal.	70c gal.
*Rosin oil, 2nd run	72c gal.	72c gal.
Linseed oil	1.48 gal.	1.48 gal.
**Turpentine	66½c gal.	65c gal.
Pine Tar—		
Kiln burnt oil, bbls	$15.00	
Retort oil, bbls	$17.00	

*F. O. B. barrels, shipping point.
**Savannah, Ga., market.

MIDCO BULLETIN

LIMITED QUANTITIES

24-28 FUEL OIL
56-57 GASOLINE
58-60 GASOLINE

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General Offices:
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Export Market

The following export quotations are those of the New York Produce Exchange, which are fixed by the export department of the Standard of New York. No quotations on naphthas or gasolines for export have been given out since last May.

ILLUMINATING OILS

Quotations are based on the following quantities: Bulk, tank steamer lots, ranging from 30,000 to 70,000 barrels, according to steamer capacity; barrels, cargo lots, about 30,000 barrels; cases, cargo lots averaging from 10,000 to 20,000 cases.

	S. W., 110 test. Mar. 4	Feb. 25
Bulk, gal., New York	9.25	9.25
Barrels, gal., N. Y., cargo	17.25	17.25
Cases, gal., New York	20.25	20.25

Prices for water white oil (150 test) are 1 cent higher than those for standard white.

Export Operations On A Lighter Scale

By Special Correspondent

NEW YORK, March 3. — The export movement from the local port seems to have lost its edge. This slackening of operations may be accounted for by the covering of the more pressing needs and the unwillingness of foreign traders to give consideration to stocking operations while the tonnage situation is still in the process of adjustment, with ultimate promise of fairly normal rates. The week's charter market has comprised but two petroleum fixtures, both of refined oil, one of 40,000 cases, New York to the River Plate, at $1.15 per case, March loading, and the other of 8,000 barrels, New York to Havre, at $6 per barrel, prompt.

The full cargo steamer market has continued firm, influenced by a good demand for prompt boats and very limited offers of a class suitable for trans-Atlantic or long voyage trading. For forward delivery rates are a trifle lower. Trans-Atlantic freights continue to predominate, West Indian and South American orders being limited in numbers. Cargo space on the berth is reported freely available, with shippers in a position to close on a fairly reasonable basis. The question of foreign credit has been mentioned as a factor to induce a more or less conservative policy in the closing of petroleum engagements.

England and France are believed to be fairly well fixed as far as current and nearby needs of kerosene are concerned, but stocks in the local market are still at a premium for general purposes. One explanation of this condition is that the yield has been affected by the war pressure on motor and fuel oil distillation. While the foreign gasoline movement continues moderate, some of the local factors are inclined to view the prospects with greater assurance with the freight situation on a more confident basis. The tractor consumption is believed to be looming up as one of the most promising fields.

Buy 400,000 Barrels Fuel Oil For Lake Ships

Bids were opened last Monday at the Cleveland office of the United States Shipping Board in Cleveland, Perry-Payne Bldg., for 400,000 barrels of fuel oil, meeting the Navy specifications for delivery at Great Lakes ports, Cleveland principally, during the navigation season of 1919. Prices asked outside Cleveland were f. o. b. various shipyards in tank cars on rail alongside ships. Successful bidders must guarantee a continuous reserve stock at point of shipment of not less than 50,000 barrels.

In connection with bids asked for 300,000 barrels for delivery aboard ship at Cleveland, the stipulation was made successful bidders must furnish tankage and bunkering equipment capable of loading two ships at any one time, about 3,500 barrels each, with a minimum loading time of not to exceed six hours per ship.

Crude Oil Situation In A Nutshell

Below is given the crude oil situation in this country in a nutshell, the figures used being those furnished by the U. S. Geological Survey and the Oil Division of the Fuel Administration. They apply to all fields east of the Rockies, California, which does not have the bearing on the situation of other producing districts in this country, being excluded. Figures are in barrels of 42 gallons:

	Moved From Field	Deliveries	Stocks
December, 1918	19,637,286	22,398,218	96,268,452
November, 1918	20,783,899	24,378,909	99,419,237
December, 1917	19,454,482	23,389,410	119,144,713

Crude stocks east of Rockies reduced 22,876,261 barrels in year from Jan. 1, 1918, to December 31, 1918; reduced 3,150,785 barrels during December, 1918; reduced 3,250,281 barrels during November, 1917.

Tank Wagon, Service Station Markets

Standard Oil Company's service station and tank wagon quotations on gasoline and tank wagon price for kerosene in cents per gallon.

	Gasoline Tank Wagon March 4	Gasoline Service Station March 4	Oil Tank Wagon March 4
EASTERN POINTS			
New York	24.5	26.5	12.5
Baltimore, Md.	22.5	24.5	9.5
Boston	25.5	27.5	12.5
Philadelphia	24.3	27	12
Newark, N. J.	22.5	24.5	9.5
Atlantic City, N. J.	22.5	24.5	9.5
Buffalo	23.5	25.5	11.5
Pittsburgh	24.3	27	12
Cleveland	25.5	25.5	13.5
Annapolis, Md.	22.5	24.5	10.5
Washington	22.5	24.5	10
Richmond, Va.	23	25	10.5
Danville, Va.	23.5	25.5	12
Roanoke, Va.	23.5	25.5	11.5
Petersburg, Va.	23.5	25.5	11
Burlington, Vt.	25.5	27.5	12.5
Charleston, W. Va.	23.5	25.5	12
Keyser, W. Va.	23.5	25.5	11.5
Parkersburg, W. Va.	23.5	25.5	11
Mt. Airy, N. C.	25	25	14
Salisbury	25	25	13.5
Hickory	25	25	13.5
Wheeling, W. Va.	22.5	24.5	10
Hartford, Conn.	24.5	26.5	11.5
Bridgeport, Conn.	24	26	11.5
New London, Conn.	25.5	27.5	11.5
Dover, Del.	24.3	27	13
Wilmington, Del.	24.3	27	13
Augusta, Me.	25.5	27.5	12.5
Portland, Me.	25.5	27.5	12.5
Providence, R. I.	25.5	27.5	12.5
MIDDLE WEST			
Chicago	*23	23	12
St. Louis	22.4	22.4	11.4
East St. Louis	22.5	22.5	11.5
Omaha, Neb.	24	24	12.7
Crawford, Neb.	25.5	25.5	14.2
Kansas City	22.3	22.3	10.8
Topeka	22.7	22.7	11.2
Wichita	22.7	22.7	11.2
Peoria, Ill.	23	23	12.5
Detroit	23.7	23.7	12.7
Bay City	23.8	23.8	12.8
Indianapolis	23	23	12.5
Ft. Wayne, Ind.	23	23	12.5
Minneapolis	24	24	12.5
Pipestone, Minn.	24.6	24.6	12.9
La Crosse, Wis.	22.5	23.9	12.9
Milwaukee	23.1	23.1	12.1
Madison, Wis.	23.2	23.2	12.2
Fargo, S. Dak.	26.1	26.1	14.3
Sioux City, Ia.	22.9	22.9	12
Des Moines, Ia.	23	23	11.7
Keokuk	22.9	22.9	11.6
Bismark	27.2	27.2	16.5
SOUTHERN POINTS			
Birmingham, Ala.	24.5	26.5	14
Mobile, Ala.	23	25	13
Fort Smith, Ark.	23.5	25.5	13.5
Little Rock, Ark.	24	26	12.5
Texarkana, Ark.	24.5	26.5	13.5
Louisville, Ky.	23.5	25.5	12.5
Bowling Green	25.5	27.5	13.5
Atlanta, Ga.	24.5	26.5	14
Augusta, Ga.	26.5	28.5	14
Savannah, Ga.	25.5	27.5	13
Houston, Tex.	23.5	25.5	14.5
Galveston, Texas	24	26	15
New Orleans	23	23	12
Nashville, Tenn.	23.5	26.5	13.5
Memphis, Tenn.	23	23	13
Tampa, Fla.	23.5	25.5	12
Ft. Myers	25.5	27.5	13
Jackson, Miss.	23	23	12.5
Natchez, Miss.	25	25	12.5
Charleston, S. C.	24.5	24.5	11.5
Columbia, S. C.	24.5	24.5	13.5
ROCKY MOUNTAINS			
Denver, Colo.	25.5	27.5	14.5
Glenwood Spgs., Col.	29.5	30.5	19
Pueblo, Col.	25.5	27.5	14.5
Casper, Wyo.	22.5	22.5	11.5
Basin, Wyo.	25	25	14.5
Cody, Wyo.	25.5	25.5	14.5
Lander, Wyo.	25	25	14.5
Cheyenne	25.5	27.5	14.5
Billings, Mont.	26.5	26.5	15.5
Butte, Mont.	28	28	17
Miles City, Mont.	28	28	17
Great Falls, Mont.	28	28	17
Salt Lake City	26	28	17
Ogden, Utah	26	28	17
Boise, Idaho	28.5	28.5	17.5
FAR WEST			
San Francisco	20.5	20 5	9.5
Los Angeles	20.5	20.5	9.5
Portland, Ore.	21.5	21.5	10.5
Seattle, Wash.	21.5	21.5	10.5
Spokane, Wash.	25	25	13.5
Tacoma, Wash.	21.5	21.5	10.5
SOUTH WEST			
Oklahoma City	23.5	24.5	13.5
Bartlesville, Okla.	23	23	12
Tulsa	23.5	25.5	13.5
Fort Worth	24.5	25.5	14.5
Shreveport	23.5	23.5	12.5

*A quantity fill price schedule is in effect here which makes the market 23 cents on deliveries of up to 100 gallons; 21 cents on deliveries of 100 to 250 gallons; 20.5 cents above.

Crude Oil Quotations and Statistics

Crude Prices

Quoted by the predominating pipe line companies in each field. All prices are at the well in barrels of 42 gallons.

Jan. 14 Caddo heavy crude in Louisiana fields was reduced from $1.55 to $1.25 a barrel. Feb. 4 it was again reduced to $1.

Jan. 14 all grades of Gulf Coast crudes were reduced from $1.80 to $1.50 a barrel. Feb. 4 they were reduced to $1.25 except Spindletop which stands at $1.30.

Feb. 21 the price of Corsicana heavy was reduced 25 cents a barrel to $1.05, and Healdton crude was reduced 25 cents to $1.20.

EASTERN FIELDS

Prices

	Mar. 4 1919	Jan. 1, 1919	Jan. 1, 1918
Pennsylvania	$4.00	$4.00	$3.75
Cabell	2.77	2.77	2.73
Wooster, O.	2.58	2.58	2.38
Corning	2.85	2.85	2.80
North Lima	2.38	2.38	2.08
South Lima	2.38	2.38	2.08
Indiana	2.28	2.28	1.98
Princeton	2.42	2.42	2.12
Somerset	2.60	2.60	2.55
Ragland	2.32	2.32	1.20
Illinois	2.42	2.42	2.12
Plymouth	2.33	2.33	2.03
Canadian Petrolia	2.78	2.78	2.48

MID-CONTINENT

Kans.-Okla.	$2.25	$2.25	$2.00
Healdton	1.20	1.45	1.20

TEXAS FIELDS

North Texas

	Mar 4 1919	Jan. 1, 1919	Jan. 1, 1918
Electra	$2.25	$2.25	$2.00
Henrietta	2.25	2.25	2.00
Corsicana light	2.25	2.25	2.00
Corsicana heavy	1.05	1.30	1.05
Strawn	2.25	2.25	2.00
Moran	2.25	2.25	2.00
Ranger	2.25	2.25	....

Gulf Coast

Spindletop	$1.30	$1.80	$1.05
Goose Creek	1.25	1.80	1.00
Sour Lake	1.25	1.80	1.00
Humble	1.25	1.80	1.00
Batson	1.25	1.80	1.00
Saratoga	1.25	1.80	1.00
Dayton	1.25	1.80	1.00

LOUISIANA FIELDS

Caddo, above 38°	$2.25	$2.25	$2.00
De Soto, above 38°	2.15	2.15	1.90
Caddo, 35°	2.15	2.15	1.90
Caddo, 32°	2.10	2.10	1.85
Caddo, heavy	1.00	1.55	1.00
Crichton	1.75	1.75	1.50

Wyoming

Elk Basin	$1.85	$1.85	....
Grass Creek	1.85	1.85	....
Big Muddy	1.50	1.50	....
Salt Creek	1.50	1.50	....

CALIFORNIA

San Joaquin Valley Fields

Kern River, Midway Sunset, McKittrick, Lost Hills-Belridge, Coalinga.)

14 deg. to and including 17.9 deg. $1.23

18 deg. to and including 18.9 deg. 1.24
and for each increase in gravity of one (1) full deg. above 18.0 deg. gravity, to and inclusive of 29.4 deg. gravity, one (1) cent per barrel additional.

25 deg. to and including 25.9 deg. $1.32
and for each increase in gravity of one (1) full deg. above 25.0 deg. gravity up to and inclusive of 36.9 deg. gravity, two (2) cents per barrel additional.

37 deg. to and including 37.9 deg. $1.57
and for each increase in gravity of one (1) full deg. above 37 9 deg. gravity, three (3) cents per barrel additional.

Whittier-Fullerton and Santa Maria Fields

Crude from these fields is quoted the same as for San Joaquin Valley Fields above, except the lower gravity crude purchased is 16 degrees.

Ventura County

The price of crude from the Ventura County fields is based on the same gravity schedule as for the above California grades, starting with $1.32 per barrel on oil of 25 degrees Be. gravity.

Crude Movement by Districts by Months

Below is given a summary of the crude oil movement in this country for the last four months for which figures are available, as compared with the same months a year ago. The figures used are those of the United States Geological Survey. They are taken from reports submitted by the principal pipe line and refining companies that handle or receive oil directly from the producing fields east of the Rockies. They show the movement of crude from field sources by months and by districts; crude deliveries to refiners or other consumers and stocks of crude as of the end of the month. All figures are on barrels of 42 gallons.

	Crude Moved From Field		Crude Deliveries		Crude Stocks	
	1918 Barrels	1917 Barrels	1918 Barrels	1917 Barrels	1918 Barrels	1917 Barrels
APPALACHIAN						
September	2,089,078	2,087,446	2,154,511	2,008,556	3,477,339	4,495,482
October	2,399,957	2,262,950	2,388,351	2,515,838	3,446,801	4,242,594
November	2,160,909	2,132,583	2,179,361	2,312,448	3,428,226	4,062,729
December	2,408,327	1,934,367	2,204,498	2,112,637	3,704,248	3,858,646
LIMA-INDIANA						
September	238,978	270,403	295,986	449,969	1,300,330	1,923,664
October	268,201	298,957	190,092	242,820	1,378,439	1,979,801
November	237,315	282,227	390,943	259,368	1,207,569	2,002,660
December	246,213	223,753	298,255	277,702	1,155,527	1,953,712
ILLINOIS						
September	1,097,459	1,263,909	1,308,689	1,164,573	2,375,139	4,226,325
October	1,145,193	1,305,571	1,342,725	1,364,175	2,177,607	4,167,721
November	1,019,300	1,246,105	1,019,300	1,258,959	2,177,090	4,154,867
December	1,059,309	1,433,528	1,035,921	2,020,868	2,200,478	3,583,471
OKLA.-KANS.						
September	11,031,265	13,593,692	14,916,657	15,488,070	79,863,686	102,694,751
October	11,505,257	13,827,993	14,126,965	16,118,415	77,271,154	100,404,329
November	11,334,048	13,822,893	15,251,099	15,033,159	73,813,897	99,194,063
December	9,609,795	11,753,935	13,154,781	14,063,307	69,832,286	95,447,119
CENTRAL AND NORTH TEXAS						
September	1,575,631	975,827	1,115,631	951,387	4,600,182	2,196,603
October	1,646,638	983,834	1,640,592	770,934	4,611,004	2,409,503
November	1,904,399	986,486	1,362,330	1,016,318	5,155,017	2,382,671
December	2,116,789	963,333	1,970,669	785,202	5,281,504	2,510,809
NORTH LOUISIANA						
September	1,376,625	814,341	999,720	1,041,464	4,622,472	3,446,862
October	1,483,168	769,755	1,354,441	927,889	4,751,199	3,288,728
November	1,321,715	290,487	1,305,950	653,030	4,766,964	2,926,185
December	1,388,139	490,510	1,217,321	793,249	4,933,537	2,623,445
GULF COAST						
September	1,883,536	2,115,244	2,431,565	1,914,260	7,544,880	9,283,280
October	1,852,390	1,978,668	1,334,323	1,873,446	8,066,732	9,388,502
November	1,591,685	1,502,122	1,656,674	1,612,927	7,905,067	9,277,697
December	1,695,036	1,800,917	1,364,468	2,499,332	8,237,877	8,651,917
ROCKY MOUNTAIN						
September	1,091,951	819,229	1,183,510	857,789	1,002,861	577,749
October	1,194,479	847,591	1,230,758	844,332	966,582	581,008
November	1,214,528	781,913	1,213,252	868,043	965,407	494,878
December	1,113,678	854,139	1,152,313	827,113	922,995	515,593

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OIL FINANCE

Upward Movement Of Stocks Broadens

THE buying movement in securities, which set in two weeks ago, continued pretty generally the past week and broadened out noticeably, permitting of participation by a wider variety of securities. There were periods of profit taking, but in general the movement of prices was upward. The oil shares, which were leaders in the new turn of affairs on the market at the start, continued strong, with prices practically at the level of a week ago. The removal of artificial money restrictions has brought about a considerable increase in transactions of a purely speculative nature, which in part at least accounts for the temporary setbacks of the market due to profit taking.

Encouraging Signs

Indications seem to point, however, to a greater interest on the part of the general public in the market, and that in itself is an encouraging sign. That there is still stagnation in many industrial lines cannot be denied, but the market apparently is going on the theory that that period of stagnation has about run its course. It looks upon readjustment as proceeding slowly but none the less definitely.

Mexican Situation Improving

The Mexican situation continues to improve, if the securities of companies owning properties are to be taken as a guide. Mexican Petroleum improved its position by several points early in the week, coincident with the announcement financial interests in this country, France and England have formed a bankers' committee to look after Mexico's financing. It suffered a setback later, however. Cities Service common stock was in good investment demand.

The Standard Oils have had a substantial advance the last few months, but the majority of their prices are still below the high points of 1917, and conditions in the trade generally now are better than in the early part of 1917 when the high prices for that year were made.

Cullinan Now Heads Galena Signal Company

At the annual meeting of the Galena Signal Oil Company held recently, J. S. Cullinan was elected president to succeed Gen. Charles Miller, who has been head of the organization for a number of years. Cullinan is a well known pioneer producer of the western oil fields, having been one of the organizers of the Texas Company and a former president. Gen. Miller resigned from the directorate of the company also.

Election of Cullinan to the presidency indicates the Galena-Signal company is to put its principal efforts to developing the producing and refining properties it secured nearly a year ago when it purchased the capital stock of the American Republics Corporation, a holding companies representing the interests of Cullinan in three Texas producing and refining subsidiary companies. Included in the properties is a refinery on the Ship Channel at Houston. To finance these purchases the Galena Signal Company increased its capital stock from $12,000,000 to $20,000,000 in a new class of preferred stock. Part of the new preferred was offered to stockholders at par, $100.

The acquisition of these properties gives the Galena Signal new facilities for the production of high grade lubricants. Its principal plant is now located at Franklin, Pa., where its supply of crude is limited.

The Galena Signal Company has passed the dividend on its common for the first quarter. It was passed the last quarter of 1918, the third quarter it was cut to half the usual payment. The company has been paying at the rate of 3 per cent quarterly.

Five new directors were elected to the board, including Mr. Cullinan. The others were Frederick Strauss of J. & W. Seligman & Co., John B. Dennis of Clair & Co., L. F. Jordan and D. V. Sedgewick. They succeeded Charles Miller, C. C. Steinbrenner, G. C. Miller, D. D. Mallory and G. F. Proudfoot, J. French Miller and L. J. Drake were re-elected directors.

L. J. Drake, formerly a vice-president, was elected first vice-president, while L. F. Jordan and J. E. Linehan succeeded C. C. Steinbrenner and G. C. Miller as vice-presidents.

Ohio Oil Company's 1918 Balance Sheet

Earnings of the Ohio Oil Company for 1918, as disclosed by a study of the company's balance sheet, apparently were a little better than $12,000,000 on its $15,000,000 capitalization, after deductions for taxes running heavier than in 1917. Net earnings for 1917 were around $13,500,000. The balance sheet does not disclose the amount reserved for taxes, but accounts payable, including tax liability, show an increase from $4,533,493 in 1917 to $6,469,755 in 1918.

After paying $14,400,000 in dividends, at the rate of $24 per share per annum, surplus decreased by $2,111,107, the total surplus standing now at $63,839,642. The balance sheet as of December 31, 1918, shows cash and accounts receivable amounting to $68,530,440. The balance sheet compares with that of December 31, 1917, as follows:

	1918	1917
Assets		
Prop. acct	$16,778,957	$17,303,763
Cash accts. rec..	68,530,440	68,180,479
Total	$85,309,397	$85,848,242
Liabilities		
Cap. stock	$15,000,000	$15,000,000
Accts. & tax payable	6,469,755	4,533,493
Surplus	63,839,642	65,950,749
Total	$85,309,397	$85,848,242

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Kentucky Standard Shows Big Earnings

The Standard Oil Company of Kentucky reports net profits for 1918 after charges of $2,713,948.19. After deductions of $1,250,000 for income and war profits tax, the balance from the year's operations was $1,463,948.19, at the rate of about 27.7 per cent on its $600,000 capitalization, as compared with earnings of $1,701,334 in 1917, after making a readjustment in the figures as given for that year to allow the payment of $265,686.44 more in war profits and income tax than was laid aside from 1917 earnings for that purpose. The sum of $560,000 was originally set aside for that purpose. Readjusted 1917 earnings were at the rate of 28.3 per cent on the $6,000,000 capitalization.

After further payment of $720,000 in dividends and deducting from 1918 earnings the $265,686.44 for 1917 income and war profits tax in excess of the $560,000 set aside from 1917 earnings, there was a balance to surplus for the year of $478,262. Surplus and undivided profits as of December 31, 1917, was $2,356,345.47. Surplus and undivided profits as of December 31, 1918, was $2,834,607.22.

During the past year the company has practically completed its refinery on riverfront property at Louisville, Ky., which is in a position to operate on either Oklahoma or Kentucky crude. The company's balance sheet as of December 31, 1918, shows a considerable increase in plant account, largely due to expenditures on its Louisville refinery. The price of the company's stock has advanced the last few months selling up to over $400.

The balance sheet as of December 31, 1918, compared with that of a year ago is as follows:

ASSETS

	1918	1917
Plant, improvements and equipments	$ 6,414,814.69	$ 5,232,280
Merchandise	5,544,034.44	3,642,129
Cash, accts. receivable and other investments	3,329,118.27	3,318,570
	$15,287,967.40	$12,192,979

LIABILITIES

Capital stock	$ 6,000,000.00	$ 6,000,000
Accts. apyable	3,370,383.67	1,771,109
Reserve (accrued dep.)	1,646,372.33	1,331,314
Insurance funds	186,604.18	174.211
Fed. income and war tax res.	1,250,000.00	560,000
Surplus and undivided profits.	2,834,607.22	2,356,345
	$15,287,967.40	$12,192,979

At the annual meeting, S. W. Coons, a director of the company, was elected second vice president, a new office. A. K. Whitelaw, another director, was elected assistant secretary in the place of Mr. Coons. G. H. Stansbury continues as first vice president and C. T. Collings as president. Old directors were re-elected.

The Chesebrough Manufacturing Company has resumed payment of its quarterly dividend of $3 a share and 50 cents extra. It is payable March 20th to stock of record March 1st. Three months ago the dividend was passed.

How Oil Shares Moved Last Week

	High 1918	Low 1918	No. Shares Sold	Price Feb. 21	Week's High	Week's Low	Price Feb. 28
NEW YORK STOCK MARKET							
Cal. Petroleum	24⅜	18¼	15,100	28¾	28¾	26⅜	26½
Mex. Petroleum	197¾	79	145,000	184	184	170	174½
Ohio Gas	48	35⅝	28,200	37½	37¾	37	37¼
Okla. Prod. & Refg	10½	6¼	9,400	9	9	8⅝	8¾
Pierce Oil	19½	13	6,900	18¼	18¼	17⅛	17⅜
Royal Dutch	145	70	51,500	99	99	90⅝	91⅛
Sinclair Oil Corporation	39	25½	21,700	37¾	37¾	35½	35½
Texas Oil	203	136½	22,000	195⅞	195⅞	191	191
Pan-Amer. Pet. Co	74¼	40	93,800	82⅞	82⅞	78⅞	77⅛
Pan-Amer. pfd	.....	.....	1,000	142	142	136½	136½
NEW YORK CURB MARKET							
Cosden & Co	8⅞	5⅞	12,900	7½	8¾	7⅜	8⅛
Cosden pfd	4¼	3½	200	4¼	4¾	4¼	4¼
Elk Basin Pet	7½	⅝	No sales recorded.				
Federal Oil	4	1⅝	14,500	2⅞	2⅞	2½	2⅝
Glenrock Oil	.....	3⅛	8,200	3⅞	3⅞	3⅛	3¼
Houston Oil	86½	39¾	3,600	83	84½	79	80½
Int. Petroleum	20¼	12¾	24,300	23	23	22⅛	22⅛
Island Oil & Trans	7⅜	1¾	48,000	7½	7¾	7½	7⅝
Louisiana Refg	.....	.....	18,400	37¾	40	37¼	38⅞
Merritt Oil Corp	29⅞	17½	8,600	24¾	24¾	24	24½
Midwest Oil	$1.35	87c	68,000	$1.42	$1.45	$1.31	$1.44
Midwest Refg	140	97	9,400	.....	159	150	.....
Okmulgee Refg	11¾	1⅞	5,000	.....	1½	1⅜	1¾
Sapulpa Refg	10¾	6¼	1,800	.....	7⅜	7½	.....
Sinclair Gulf	24½	15	22,400	28¼	29½	27½	28½
PITTSBURGH STOCK MARKET							
Columbia Gas & Elec	44¾	28⅞	292	42¼	45½	44	45½
Lone Star Gas	197	95	967	186	204	185¾	202
Man. Light & Heat	53	46½	465	50	50	49¾	49⅞
Ohio Fuel Oil	16¾	13¾	275	20¼	20	18¾	19
Ohio Fuel Supply	46⅜	40⅝	2,948	44⅞	45	44⅝	44⅝
Oklahoma Nat. Gas	32⅝	23	1,650	29⅜	29½	29⅛	29⅛
Oklahoma Prod. & Refg	10⅜	5⅝	30	8⅞	9⅝	8¾	8¾
Pittsburgh Oil & Gas	8	5½	4,291	9¼	9¾	9½	9½
Riverside Eastern Oil Co	1¾	⅝	100	.....	¾	¾	¾
Riverside Eastern Oil pfd	2¾	2¾	600	.....	2¾	2¾	2¾
Riverside Western Oil pfd	14	13¾	18	.....	15	15	15
PITTSBURGH CURB MARKET							
Tropical Oil	14	4	1,860	13	13⅜	12¾	13
Marland Refining	.....	.....	100	6½	6¾	6¾	6¾
Gulf Oil Corporation	.....	.....	30	.....	370	370	370

STANDARD OIL GROUP.

Standard Oil securities are dealt with to only a small extent on the New York curb market, the great majority of sales being made over the counters of investment bankers. For this reason no record can be obtained of the total volume of sales from day to day to indicate the activity of any particular stock Below are bid and asked quotations prevailing on the curb market at the close of business on the date given, the same quotations prevailing in the majority of unrecorded transactions:

	Feb. 28 Bid	Feb. 28 Asked	1918 High	1918 Low
Anglo-Amer	17¾	18¼	18	11¼
Atlantic Refg	1,250	1,270	1,040	885
Buckeye Pipe Line	91	93	101	84
Cont. Oil Co	540	560	510	390
Galena Signal	88	92	148	83
National Transit	17	18	17	11¼
Ohio Oil	323	328	365	289
Ill. Pipe Line	170	175	196	140
Penn. Mex	58	60	49	25
Prairie Oil & Gas	640	650	610	407
Prairie Pipe	267	272	305	242
SouthPenn. Oil	175	185	310	240
Solar Refg Co	340	360	390	290
S. O. California	268	273	257	207
S. O. Indiana	750	780	755	525
S. O. Kansas	580	600	555	435
S. O. Kentucky	400	410	350	298
S. O. New York	330	335	304	245
S. O. New Jersey	685	690	630	495
S. O. Ohio	470	480	490	375
Vacuum Oil	418	123	420	312
Union Tank Line	114	117	110	82

MISCELLANEOUS STOCKS.

The following are bid and asked prices ruling at the close of business on the date given on the Cleveland stock market, with the high and low marks reached during 1918:

	Feb. 28 Bid	Feb. 28 Asked	1918 High	1918 Low
Cities Service	339	340	323½	201½
Cities Serv. pfd	79	80	138	65¼
Paragon Refg	27½	28	28	21¾
Paragon pfd	.....	102¼	99	95½
National Refg	.....	190	203	170
National pfd	.....	124	126	123
Lone Star Gas	.....	.....	197	95